MASTER IN BUSINESS ENGINEERING PROFESSIONAL FOCUS IN ANALYTICS & DIGITAL BUSINESS

The challenges to the adoption of cryptocurrencies
a study of the factors slowing down their adoption

Rachidi, Malika

Award date:
2021

Awarding institution:
University of Namur

The challenges to the adoption of cryptocurrencies: a study of the factors slowing down their adoption

Rachidi Malika

Directeur: Prof. Sarah Bouraga

Mémoire présenté
en vue de l'obtention du titre de
Master 120 en ingénieur de gestion, à finalité spécialisée
en Analytics & Digital Business

ANNEE ACADEMIQUE 2020-2021

Université de Namur, ASBL
Faculté des Sciences économiques, sociales et de gestion – Département des Sciences de gestion

Rempart de la Vierge 8, B-5000 Namur, Belgique, Tel. +32 [0]81 72 49 58/48 41

Acknowledgements

My master's degree at the university of Namur is finally coming to an end. For me, it has been two incredible years during which I have been able to acquire knowledge that will always remain anchored and be useful. Reaching this stage is only due to the people who accompanied me and all the quality professors teaching at this university. That is why I would like to thank each and every one of these people.

I would also like to thank Ms. Sarah Bouraga, whose "digital technology" course on blockchain and cryptocurrencies was the decisive element in my choice to do my master's degree at UNamur. I also thank her as a promoter. Her availability and her help have been extremely precious and motivating to push me to provide a quality work. I would also like to thank Mrs. Anick Castiaux whose courses helped me to trace the red thread of my final dissertation.

Moreover, a huge thank you to the platforms that agreed to collaborate on my work and that allowed me to obtain the necessary data to carry out this research. I could not have done it without you, and I hope you will also enjoy reading the results of your contribution.

Finally, I would like to thank my family and friends for supporting and encouraging me since the beginning.

If this thesis marks the end of my studies and already leaves me nostalgic, it also marks the beginning of a new professional adventure that I am eager to start.

Table of content

Summary

The popularity of cryptocurrencies is growing, and the current health crisis has only amplified the phenomenon. We observe that *"the questions have changed, the world is no longer asking if cryptocurrencies will succeed but how and when they will become a reality for the general public"* (Deutsche Bank, 2020). While there has been a significant evolution in the adoption of cryptocurrencies in developing countries, it seems that the evolution is much slower in others. Indeed, there are still challenges to overcome in order to face a major diffusion. In order to answer the Deutsche bank's question on how cryptocurrencies will spread, a first step will be to identify the elements that are generally holding back their adoption. Therefore, based on theories of resistance to technological innovations, this dissertation will serve as an initiating pillar in the identification of barriers to the adoption of cryptocurrencies among the population and will make it possible to complete the lack of information still present on this subject in the literature.

Résumé

La popularité des cryptomonnaies est croissante et la crise sanitaire actuelle n'a fait qu'amplifier le phénomène. " Les questions ont changé, le monde ne se demande plus si les cryptomonnaies vont réussir mais comment et quand elles vont devenir une réalité pour le grand public " (Deutsche Bank, 2020). Si l'adoption des cryptomonnaies a connu une évolution significative dans les pays en développement, il semble que l'évolution soit beaucoup plus lente dans les autres. Par conséquent, des défis à surmonter sont encore présents pour faire face à une diffusion majeure. Afin de répondre à la question de la Deutsche Bank sur la manière dont les cryptomonnaies vont se diffuser, une première étape consiste à identifier les éléments qui freinent généralement leur adoption. Ainsi, en se basant sur les théories de la résistance aux innovations technologiques, ce mémoire servira de pilier initiateur dans l'identification des obstacles à l'adoption des cryptomonnaies au sein de la population et permettra de compléter le manque d'informations encore présent à ce sujet dans la littérature.

Introduction

Popularized by the Bitcoin white paper, written by Satoshi Nakamoto (2008), the system on which the Bitcoin blockchain is based is the result of many years of research and will most likely have an irreversible impact in many areas.

The blockchain makes the need for intermediaries obsolete. It allows transactions to be carried out without the intervention of a central bank. With this technology, it is possible to trade, exchange currencies, transfer derivative products, ... It allows a rebalancing of the access to resources and gives two billion unbanked adults the possibility to access financial services through the use of cryptocurrency. Banks and institutions associated with the financial system are beginning to recognize that the payment system that underpins banking activities could be made more efficient through the application of blockchain technology. More and more companies are accepting cryptocurrencies as a means of exchange. But money is only one of the many potential applications of blockchain technology. Indeed, if trust can be created for the exchange of money, it will be possible to create trust in other areas as well.

Although it is not only finance that is concerned, it is what this paper will focus on in order to address the possible cryptocurrency democratization within society. It is also important to bear in mind that we are dealing here with a technology that is still in the process of emerging, and that it is therefore difficult to predict all the effects it could have.

There are now more than 7000 cryptocurrencies in circulation (Reeth & Hicks, 2021). However, we will focus on the most popular, namely Bitcoin, in order to first discuss its origins and functioning.

The main objective of this research will be to demonstrate whether cryptocurrencies are on the right track with regard to competing with our current currencies in payment transactions. Consequently, it will be necessary to identify the current position of cryptocurrencies in terms of diffusion.

Afterwards, we will also aim to identify the challenges and barriers that are slowing down their expansion within the economy and possible ways to overcome them. One of the main shortcomings of current research is that very little of it addresses the adoption of cryptocurrencies from a human perspective. Yet, for mass adoption to occur, it is important to pay close attention to this aspect by studying the behaviors within the population. This study will therefore try to illustrate how society currently perceives cryptocurrencies.

Part I. Literature Review

Chapter 1: History, functioning and evolution of cryptocurrencies

Innovation is often defined as a concept that refers to new solutions - technological or not - produced using recent knowledge. It reflects the introduction of a new application, a new process or a new practice within the society. Consequently, this novelty means that an individual experiences a high degree of uncertainty in seeking information about and deciding to adopt and implement an innovation (Rogers, 2003). Innovation theories focus on several factors including behavior, awareness, knowledge, decision making, and effective implementation of the innovation. They therefore represent the central component of our research and will enable us to identify the factors potentially hindering the adoption of cryptocurrencies. But before addressing these theories, a return to the origins of cryptocurrencies and an approach to the functioning of the Blockchain will be given to introduce the theme of our research.

1. Background

1.1. Back to the roots

Bitcoin was created in 2008 by an anonymous programmer named "Satoshi Nakamoto", when the world economy was in the midst of a recession. Nakamoto first registered the domain name "bitcoin.org" and then published an article on Bitcoin in October 2008. Its primary objective was to create a new currency that would hold up in terms of divisibility, portability, durability, uniformity, quality and rarity alongside previous currencies. He then developed a protocol for the implementation of bitcoin.

The objective is simple: to play on the rarity of Bitcoin. This is why the protocol foresees the creation of about 21.000.000 bitcoins in total. According to BTCdirect, more than 80% of bitcoin is already in circulation today.

Nakamoto decided to keep the code open to everyone in order to get help from others to modify and improve his project. The core of his study details the operation of an innovative peer-to-peer system for transferring payments online directly and without an intermediary. As this payment technology becomes more and more successful, two elements have become obvious. Firstly, it could revolutionize a financial system that has always seemed defined and immutable. Secondly, Bitcoin, as an electronic currency, underlies itself a technical innovation known today as the blockchain – a technology that promises to revolutionize many fields, from finance to logistics and healthcare.

Although often associated with bitcoins, blockchain technology has now many applications. As a result, there is not just one "blockchain technology", but several blockchains. Each one is adapted to a certain field, and to certain protocols. Remaining in the field of cryptocurrencies,

we can mention as an example Ethereum (Buterin, 2013) — another very well-known currency developed by Vitalik Buterin that also has its own blockchain. This one distinguished itself by the possibilities it offers. One of them is the creation of smart contracts (Buterin, 2013).

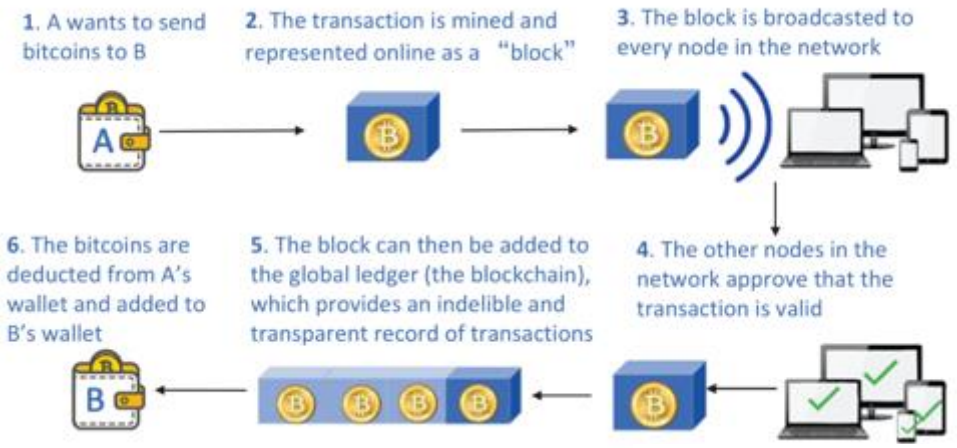
Interestingly enough, Nakamoto himself does not mention the concept of "blockchain" in his original paper "*A peer to peer electronic cash system*." Element allowing to highlight that the blockchain is in a sense only a new way of structuring data.

1.2. Bitcoin: How it works

Bitcoin is a digital currency held electronically that can be exchanged using mobile applications. A wallet generates an address similar to a bank account number with the difference that a Bitcoin address is an alphanumeric string of characters where the user can receive payments (Nian, Lam, Chuen, & David, 2015). Behind the scenes, the Bitcoin network constantly keeps track of Bitcoin balances in a distributed register called the blockchain.

The blockchain technology is continuously recording each individual's holdings (Sharmah, 2018). It is a network composed of very powerful computers allowing the propagation of information to all its members and therefore the possibility to make transactions. These computers are called nodes (Alijbar, Sharma, & Kumar, 2019). Among the nodes of the network, some can act as miners. Note that anyone can be a miner. The only requirement is to have access to an internet connection. One of the activities that miners are responsible for is the grouping of transactions into a block that must then be validated (Alijbar, Sharma, & Kumar, 2019).

Fig 1: How the blockchain works



Zhang, R., Xue, R., & Liu, L. (2019).

More precisely, once a transaction is completed, it is grouped together in a cryptographically protected block (Blockchain, 2016) with other transactions that have taken place over the last 10 minutes and that have been sent to the entire network.

The miners - members of the network with a high level of computing power - then compete with each other to validate the operations performed by solving complex coded problems (Delahaye, 2017).

The first miner to solve problems and validate the block receives a reward. This reward plays a motivating role and encourages participants to remain honest (Nakamoto, 2009). In the Bitcoin Blockchain network, a minor receives Bitcoins (Alijbar, Sharma, & Kumar, 2019). The challenge of this mining is to secure the network and create money within it by validating transactions, creating and adding blocks (Delahaye, 2017).

Indeed, the validated block of transactions is then time-stamped and added to a chain in a linear chronological order creating a “chain of blocks” that shows each transaction in the history of that blockchain (Delahaye, 2017). In order for all members of the network to have access to the same data register, the chain is continuously updated. Note that the chain being updated also means that the bitcoin wallets are updated too. This attribute allows to prove who owns what and when.

Once the validated block is added to the chain, the person to whom funds have been sent will be able to access them.

As we can see, the decentralized, open and cryptographic nature of the Blockchain allows people to trust each other and conduct peer-to-peer transactions, making the need for intermediaries obsolete.

It also brings unprecedented security benefits. Hacking attacks that typically affect large, centralized intermediaries such as banks would be virtually impossible at the blockchain level. Each main node of the network (i.e., participating in its management) keeps a copy of the blockchain registry (Zhang et al., 2019) and it is this shared, indestructible and tamper-proof information that ensures the security of the accounts (Delahaye, 2017). For example - if an individual wanted to hack a particular block within a blockchain, he would not only need to hack that specific block, but all current blocks going back to the entire history of that blockchain (Bradbury, 2013). Similarly, if one of the servers stops working, all the others continue to store the registry.

If the Nakamoto protocol was made possible, it is thanks to cryptographic hash functions (which ensure the integrity of a large file of accounts), dual key signature protocols (which certify that only the holder of an account uses it), and the proof-of-work concept (which organizes an incentive system for many users to participate in the management and monitoring of the system) (Delahaye, 2017).

1.3. The democratization of cryptocurrencies

Since Nakamoto's article, things have already changed considerably. The Deutsche Bank in its article “Imagine 2030”, compares the evolution of cryptocurrencies with the evolution of the Internet in its early days.

If we look at the graph of the adoption rate of both technologies that they presented *(see annex 1)*, it is possible to observe a similar evolution. Indeed, the Internet, a technology that has radically changed society and underpins virtually everything we do, only began to develop about 30 years ago.

It was only between 1984 and 1989 that the Internet entered a commercial phase facilitated by the upgrading of backbone links, the writing of new software and the growing number of interconnected international networks (Cohen-Almagor). The platforms were not as "user friendly" then as they are today: web page load times were slow, many seemed skeptical and reluctant, others simply did not understand this innovation. Today, everything is faster, easier to use, and it is hard for everyone to imagine a world without a connection.

Just like the Internet, cryptocurrencies are evolving. In just a few years, we have gone from a rather old-fashioned and not necessarily attractive interface to a modern, more colorful, attractive style *(see annex 2).* A presentation that is finally similar to the application interfaces that we currently use and that leads to an enriched user experience.

Individuals behaviors with regard to cryptocurrencies are similar to those observed at the launch of the Internet. Many people do not believe or understand cryptocurrencies. Others are not interested in them or see them negatively. But judging cryptocurrencies on what they are at the moment would be a mistake.

As we have seen, technology is evolving, progressing and never being where we are now. It's always a matter of looking ahead, and defining the resources needed to be able to evolve. More precisely, diffusing an innovation takes time, but one thing remains certain: the decentralized currencies hold a great potential in terms of diffusion. To illustrate this, we will use the following figure presenting several facts regarding the evolution of cryptocurrencies.

Fig 2: Key numbers

Bitcoin was the second most searched term on Google in 2017. Nowadays, everyone has heard at least once the term Bitcoin. (Forbes, 2017)

The number of cryptocurrencies on the market is now approaching 7000. (Reeth & Hicks, 2021)

The number of Bitcoin in circulation is more than 18.4 million worldwide. (McInnes, 2021)

The Deutsche Bank, in its article "Imagine 2030", predicts that the number of users of cryptocurrencies will quadruple to reach 200 million (Deutsche Bank, 2020).

Key numbers

1.4. A technological dynamic

Now that the context is set, it is necessary to identify the current position of cryptocurrencies on the market for several reasons:

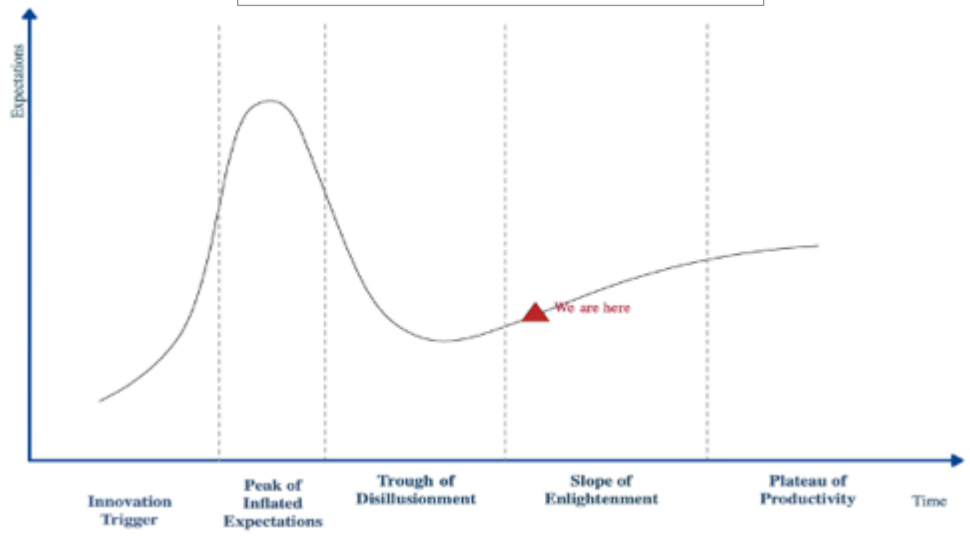
1. Being able to seize investment opportunities, not to invest too early or too late and to reduce risks as investors.
2. Formulating rules that allow a healthy development of cryptocurrencies at the level of the company as a regulator.
3. Studying the behavior of individuals with regard to the adoption of cryptocurrencies as a researcher

This study will focus on the latter; to that end, theories related to the diffusion of technological innovations applied to cryptocurrencies are used.

1.4.1. Gartner's hype cycle

Since its publication by Gartner Inc, the Gartner Hype Cycle has gained significant attention from researchers due to the growing popularity of technology and innovation management. Its main purpose is predicting when an emerging technology will become commercially viable and sustainable over the long term. Indeed, it is a model that looks at five key phases linked to life cycle (Gartner, 2020).

Fig 3: Gartner's Hype Cycle



From this representation, it can be seen that the evolution of cryptocurrencies on the market is comparable to that of any emerging technological innovation.

In our case, the *Bitcoin: A peer-to-peer Electronic Cash System* paper was the trigger for everything.

Soon after its publication, the terms Bitcoin and Blockchain became inevitable in the research world. This is the first phase of the cycle. Gartner defines it as a stage where *"a technological breakthrough kicks off and early proof-of-concept and media interest triggers significant publicity".* Often there are no usable products and commercial viability is not proven.

Thereafter, many are the cryptocurrencies to be born of which Ethereum in 2014. The second phase of the cycle is reached when, in 2017, speculation leads to an impressive increase in the price of Bitcoin, which then reaches nearly 20.000 dollars (Coindesk, 2017).

Not to mention Ethereum, which is also a huge success. This stage is characterized by a significant increase in expectations among individuals. Start-ups are created and develop various projects. Some succeed, others fail. The blockchain technology underlying Bitcoins is beginning to be considered as a radical innovation. A radical innovation surpasses existing technologies and practices in a given field. They change the world, the system by creating niches next to existing markets or by transforming these existing markets (Leifer et al., 2000).

The third phase is defined as a stage of disillusionment. It can be considered to have taken place for the most part during the year 2018. It was a year in which the failure rate of Initial Coin Offerings (ICOs) peaked. We can also mention the drop in the prices of cryptocurrencies:

Bitcoin and Ethereum in particular experienced impressive falls. Individuals are skeptical and more distrustful.

Gartner defines the fourth phase as one where *"More and more examples of how technology can benefit the business are beginning to crystallize and become better understood. Second and third generation products are emerging among technology providers. More companies are funding pilot projects; conservative companies remain cautious. »*

This phase describes our current situation. Many companies have developed concrete projects allowing the use of cryptocurrencies, especially on the Ethereum blockchain. More and more stores and companies are accepting Bitcoin as a form of payment. Some platforms allow the exchange of Bitcoins for gift cards: Bitrefill and Coincards can be obtained from more than 700 retailers including Sephora and Amazon (Tuwiner, 2020). Universities offer courses related to cryptocurrencies and Blockchain (Tuwiner, 2020). However, the Bitcoin is still not "perfect" in terms of optimization and is still in a phase of continuous improvement and adjustments. The Bitcoin is supposed to be fully integrated into the society when the phase 5 is reached.

Despite the usefulness of the Gartner Hype Cycle for tracking the global evolution of a technology innovation in the marketplace, it has some flaws that have earned it some criticisms and that need to be considered:

- It does not take into consideration the changes that may occur over time as the technology develops
- it doesn't focus on the strategies of the companies developing the innovation when they are likely to play a primary role in the success of the innovation
- It assumes that after a period of disillusionment a recovery and improvement of the situation for the product or service in question follows

These drawbacks suggest that this model should be used in conjunction with other models used in technology and innovation research (Dedehayir & Steinert, 2016).

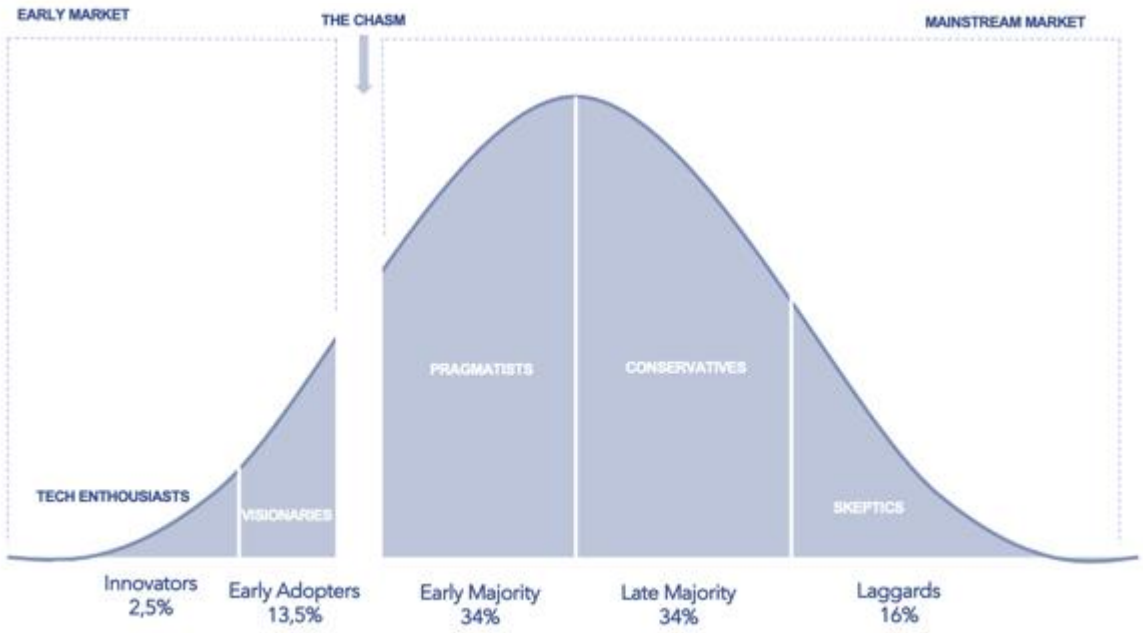
To achieve a comprehensive understanding of the over-enthusiasm that may (or may not) eventuate in relation to a new technological innovation, one theory in particular - the diffusion of innovations framework developed by Rogers - presents a fruitful starting point (Dedehayir & Steinert, 2016).

1.4.2. Rogers' market lifecycle of technology adoption

Rogers mentions in his article "the Diffusion of Innovations" that *"not all individuals in a social system adopt an innovation at the same time. Rather, they adopt it sequentially and can be categorized as adopters based on when they begin to use the innovation".*

Moore's in his book "Crossing the Chasm" used the classification developed by Rogers and developed a more precise model that we will use.

Fig 4: Technology adoption curve



Geoffrey Moore (1992)

This curve states that the success of a technology on the market is based on its ability to cross and conquer the five categories of adopters represented starting from the left. Rogers defines the categories of adopters as "the classifications of the members of a social system based on the capacity of innovation". This classification includes "innovators", "early adopters", "early majority", "late majority", and "laggards".

Innovators are very eager to try new ideas. Their characteristics are audacity and a pronounced taste for risk. They are individuals who are willing to accept a setback when the innovation they have chosen to adopt is unsuccessful. They have a very important role in the diffusion process: that of launching the new idea into the social system by importing the innovation from outside the system (Rogers, 1962). Applied to our case, these are people who have considered Bitcoin as revolutionary and a carrier of important change in the financial world. The timing and the environment in which Satoshi Nakamoto's white paper was published probably played an important role in the rapid evolution of cryptocurrency and the importance it was given by *innovators*. No one knew Satoshi Nakamoto and his article published in 2009, one year after the economic crisis of 2008, got people talking about him through his ideas. From that time on, many start-ups were created by people who decided to work on the development of blockchain technology.

Early adopters are often seen as the people to consult before investing in a new technology. Their role is to reduce the uncertainty that accompanies a new concept by adopting it, and by transmitting a subjective evaluation of it to others. Start-ups specializing in the use of cryptocurrency can already be included in this category.

A Belgian example: the start-up Argent, which has developed an application for storing, exchanging, sending and lending electronic money and whose objective is to democratize and simplify the use of cryptocurrencies. However, in order to be able to reach the early majority phase, it is necessary to go through what is called "The chasm". This is the most difficult but necessary step in order to reach mass adoption (Sahin, 2006).

In Belgium, a survey conducted by ING conducted in 2018 and 2019 showed that few Belgians are ready to adopt cryptocurrencies. An element that could explain this trend is the lack of knowledge revealed and limited to the press who often portrays electronic currencies as risky speculative instruments or instruments promoting criminal activities.

This problem illustrates that the communication towards cryptocurrencies probably needs to be improved in order to move from one phase to another and achieve a widespread diffusion of cryptocurrencies. Especially knowing that the early majority is characterized by a reasonable aversion to risk and wants to be sure that its investments have been made wisely and thoughtfully. The complexity of use needs to be considered too. However, its importance will probably lower with the increasing improvement of the user experience.

Finally, given the number of existing cryptocurrencies, many of them will likely fail to make it past the abyss stage with adopters supporting the dominant ones.

To reach the late majority, almost all the uncertainty surrounding cryptocurrencies need to disappear. They are much more skeptical and risk-averse than the previous three groups. The "laggards", on the other hand, are the last group to adopt an innovation. They are extremely risk and change averse.

1.5. Prerequisites for the success of cryptocurrencies

As we have seen, being able to overcome the chasm and the limitation to the hype phenomenon is an inevitable challenge. The following sections will show that dealing with it requires taking into consideration two important elements:

- The resistance to innovations which involves individual perceptions
- The limitations of cryptocurrencies that need to be resolved in order to have an easy and effective transfer to this form of payment

1.5.1. The resistance to innovation

Companies often underestimate consumer behavior when it comes to launching new innovations. However, consumer rejection behaviors strongly influence the speed of diffusion and adoption. Therefore, studying the resistance to innovation is important for the organizations.

It helps to design and develop new products in order to ensure market success and to reduce the high rate of failure of the new products launched in the market (Cornescu, Adam, 2013).

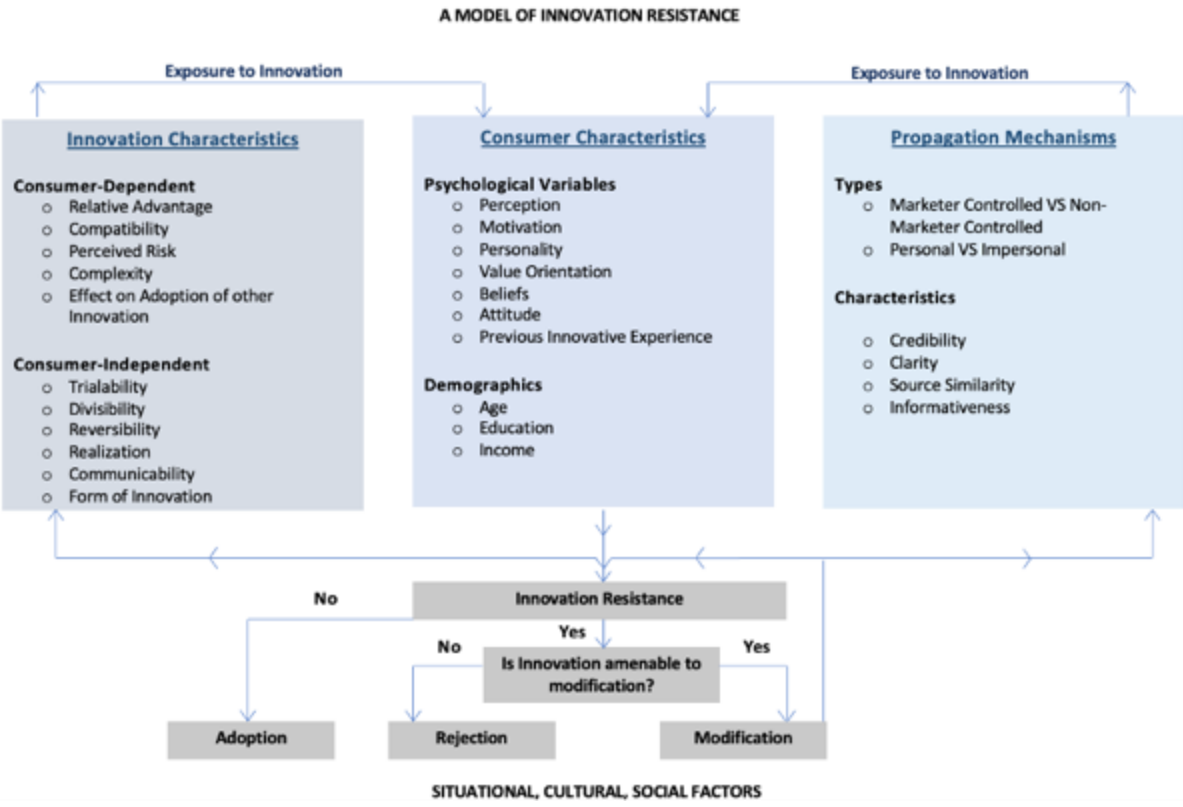
From a consumer point of view, innovations can be classified into two categories: (i) receptive innovations, and (ii) resistant innovations.

Receptive innovations are easily accepted by the consumer because they don't involve important changes regarding their belief, attitudes, traditions or habits (Ram, Sheth, 1989).

Resistant innovations, however, may have clear competitive advantages but they either conflict with consumer belief structures or require potentially large behavioral changes from a status quo that the consumer finds satisfactory (Garcia, Bardhi, Friedrich, 2007). In fact, consumers perceive the risks of changes being greater than its benefits and reject the diffusion as a defense mechanism against the possible chaotic consequences of traditional society failure (Cornescu, Adam, 2013). To adopt resistant innovations, consumers must learn new routines and habits or embrace new traditions and values. Resistant innovations thus require consumers to incur psychological switching costs as well as economic switching costs. As a result, consumers have negative attitudes toward these innovations and resist adopting them (Garcia, Bardhi, Friedrich, 2007).

As part of his research, Ram's has developed a widely used model suggesting that resistance to innovation depends on three different categories of factors.

These are the perceived innovation characteristics, consumers' characteristics and finally the characteristics of propagation mechanisms.



Ram (1987)

Fig 5: Ram's model of innovation resistance

Firstly, we'll note that the factors included in each category will not necessarily have the same effect and their individual consideration will depend on the innovation concerned.

Secondly, the importance of these categories has been confirmed by many researchers including Roger and Yu & Lee to name but a few. They consider that propagation mechanisms are rather examples of barriers to the diffusion of innovations and not factors of resistance to it.

Therefore, we can see from their model that only characteristics related to the innovation itself and to the consumers are considered to have an influence on the resistance of an individual.

Source : Lee & Yu, 1994

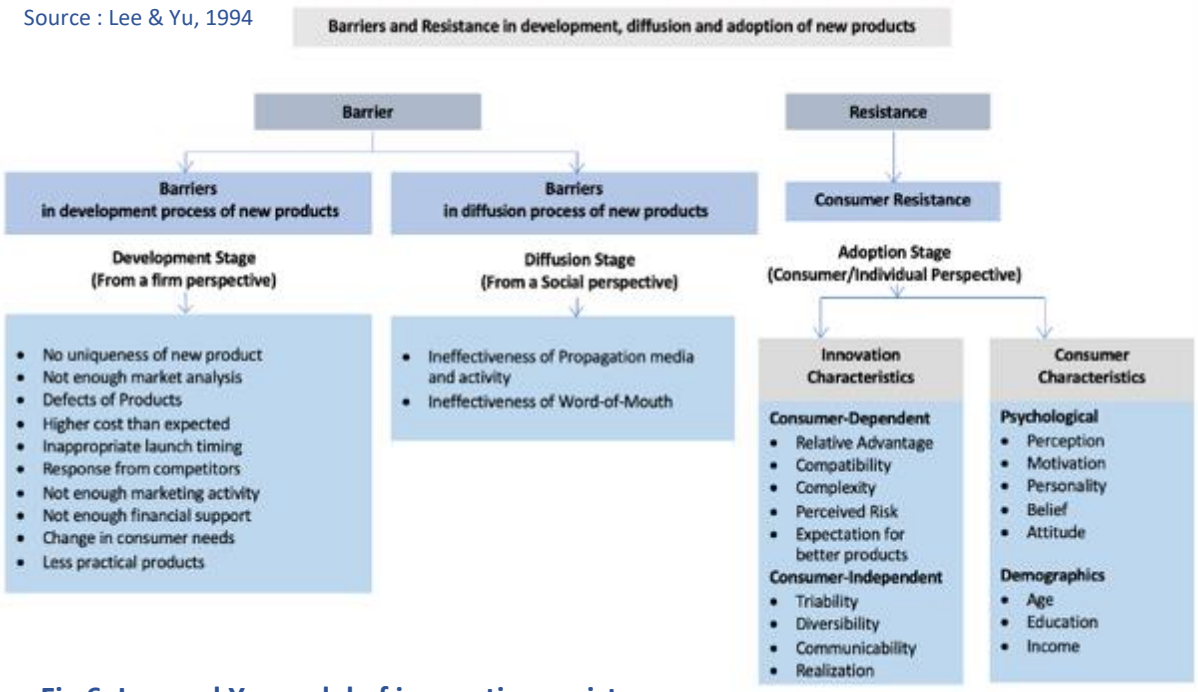


Fig 6: Lee and Yu model of innovation resistance

We can also observe within all these models that consumer characteristics are all psychological variables. These elements are particularly important in order to obtain information to describe the target population.

These theories of resistance towards innovation can be completed by other theories related to the adoption drivers of innovation. The main ones are presented:

♦ **The Innovation Diffusion Theory (IDT)**

This model, initially developed by Rogers, suggests that the most important attributes of innovations can be subsumed under five attributes that they use to build their framework (Rogers, 1962).

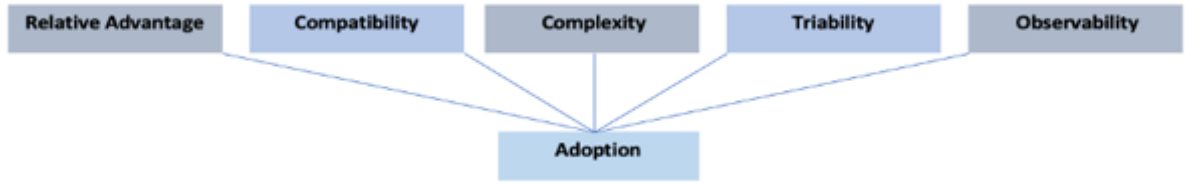
- The *relative advantage* which is the degree to which an innovation is perceived as being better than the idea it supersedes.

- The *Compatibility* which is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters. An idea that is more compatible is less uncertain to the potential adopter.

- The *Complexity* which represents the degree to which an innovation is perceived as relatively difficult to understand and use.

- The *Observability* which is the degree to which the results of an innovation are visible to others.

- The *trialability* which is the degree to which innovation can be tested before adoption.

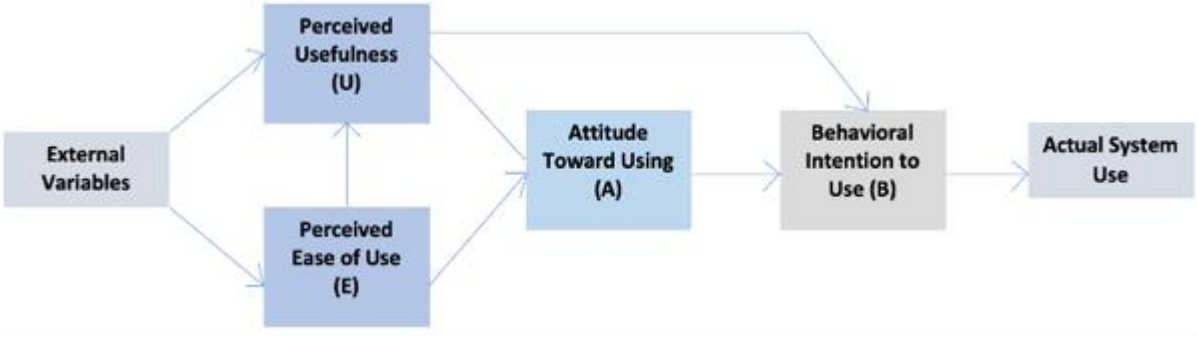


Source : Rogers, 1962

Fig 7: Innovation diffusion theory

- **The Technology Acceptance Model**

The Technology Acceptance Model (TAM) comes from Ram's model. It targets principally the adoption of technological innovation and suggests that perceived usefulness and perceived ease of use are two elements that a user is usually looking at. Then, these two variables lead to the conception of an attitude – positive or negative – toward the use of a technology. Finally, this attitude will create a behavioral intention to use the technology that will lead to the final action of using the technology.



Source : Davis (1989)

Fig 8: The Technology Acceptance Model

1.5.2. Cryptocurrencies areas for improvement

Because Bitcoins users do not benefit from any incentive, their participation in the system is conditional upon the system ability to provide a transactional service at a reasonable cost and acceptable quality (Gürcan, Del Pozzo et al., 2017). It means that the limitations still present regarding cryptocurrencies need to be faced. The main ones are the following :

- *The scalability problem:* this is the speed at which the blockchain succeeds in executing transactions. It is limited by the frequency at which each block is created in the chain, which is on average 10min. As well as the size of these blocks which is 1MB. In other words, these elements restrict the number of transactions to 7 per second (Vujičić, Jagodić et al.). It is an extremely low number. Indeed, Visa for example manages to execute between 2000 and 10,000 transactions per second.

PayPal, on the other hand, can execute between 50 and 100. Several solutions are being suggested in order to tackle this issue efficiently.

- *The cryptography problem:* Bitcoin is a system built on cryptographic knowledge. And the cryptography system used is fixed. In other words, there's only a few hash algorithms used; ECDSA, SHA-256 and RIPEMD-160 (Er-rajy, El Kiram, et al., 2017). The failure of the algorithms for Bitcoin would mean that one of the main cryptographic systems was broken. To avoid this, the Bitcoin scripting language needs to be extended to support new cryptographic algorithms.

- *The high price volatility:* the volatility of cryptocurrencies may be attractive for some investors, but for people wishing to use them as a recurring means of payment, it quickly becomes a significant disadvantage.

- *The environmental impact:* The average carbon footprint per transaction ranges from 233.4 to 363.5 kg of CO2 while the average carbon footprint for a VISA transaction equates to 0.4 g of CO2 (De Vries, 2019). Moreover, we also have the problem of the mining machines once they reach the end of their economic lifetime; there is no purpose beyond the singular task they were created to do, meaning they immediately become electronic waste (e-waste) afterward (De Vries, 2019).

Chapter 2: Relevance of the research

2. Related work

Until now, much research has focused on the factors influencing the adoption of cryptocurrencies. One example is the study carried out by Spenkelink (2014), which attempts to identify these factors in the context of different usage scenarios and according to different stakeholders in order to determine the elements that need to be improved for cryptocurrencies.

Other researchers, Saiedi, Broström and Ruiz (2020), looked at the role of legal, criminal, financial, and social determinants and indicated that the adoption of cryptocurrencies is largely due to the perception of a traditional financial system that does not function properly, a lack of trust in banks, and the possibility of getting involved in illegal activities.

Nadim (2017) was also interested in consumer drivers regarding the adoption of Bitcoins. He found out that behavioural intention was predicted most strongly by hedonic motivation, followed by perceived trust, and social influence.

All these studies are therefore mainly based on the Innovation Diffusion Theory (IDT) the Technology Acceptance Model (TAM), or the Unified Theory of Acceptance and Use of Technology (UTAUT) and confirm the importance of our procedure.

Indeed, a recent study related to cryptocurrencies adoption tried to determine the current stage of these in the field of research. They found out by analyzing them that there are still a few gaps that need to be studied and/or improved (Al-amri et al., 2019). We can cite:

1. The evaluation of factors that influence the user's intention to adopt the new technology and these should not be limited to risk, trust and security only. Researchers need to take into account the consumer resistance to change and to consider awareness factors as an important element determining factors influencing the adoption of cryptocurrencies.

2. The sampling size: usually research is done using a small one which does not cover a large geographical location. Geographical location refers to the type of people interviewed: end users, banking sectors…

3. Few papers address the adoption of cryptocurrencies from human perspectives and address the users' perception towards using cryptocurrency as a new method of payment.

Our approach will therefore attempt to address these issues.

Firstly, we will focus particularly on factors related to resistance to innovation through the use of a model that also takes into account the individual characteristics of the respondents as well as factors related to awareness.

Secondly, our quantitative approach will allow us to target a large sample. The objective is to obtain at least 200 valid answers. The entirety of this paper finally puts forward the users of cryptocurrencies and their perceptions. The notion of user as it has already been mentioned several times refers to the population as such, although restrictions within the population have been put in place to improve the validity and quality of our results.

Part II. Methodology

Chapter 3: Conceptual model, survey and sample overview

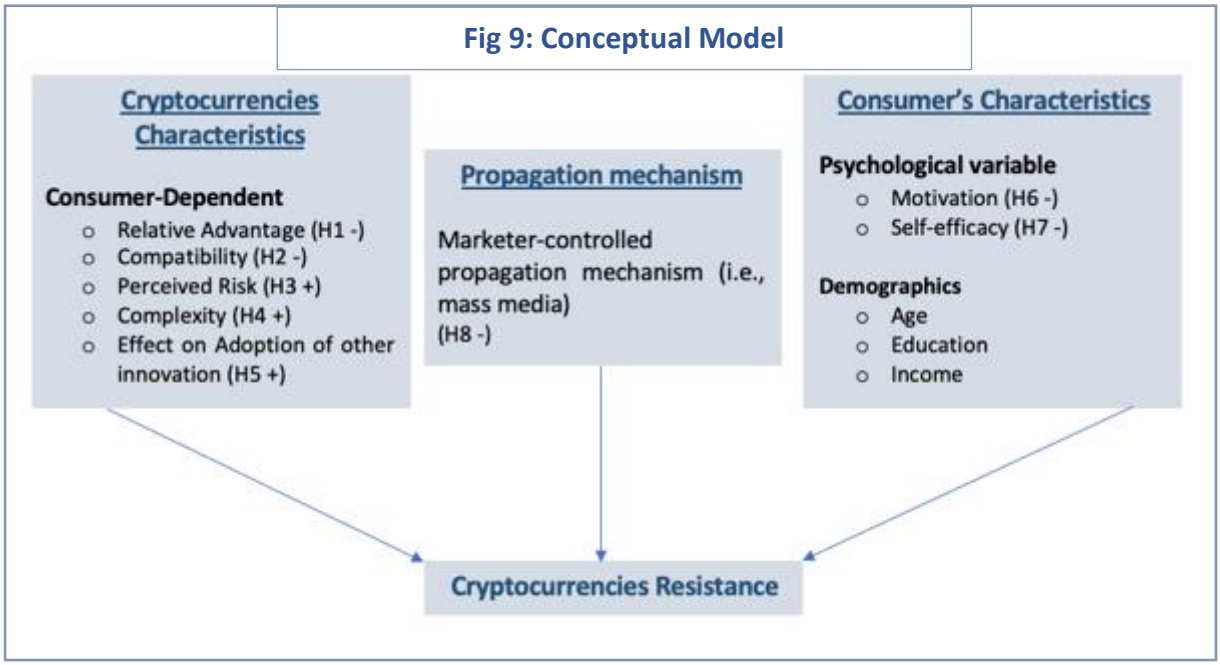
Let's recall that the aim of this thesis is to determine what are the impediment and therefore the challenges related to the adoption of cryptocurrencies within society.

Thanks to the literature section, we have reviewed in a global way the situation in which cryptocurrencies are currently found. We also have addressed a few of the most important and known theories related to the diffusion of innovations, the adoption of innovations and the resistance to innovations. The theory initially developed by Ram will serve as a basis for the construction of our research hypotheses which will then be verified through a predominantly quantitative approach. Indeed, this one is justified by our main objective: to target a large sample in order to obtain more precise results and therefore much more representative of the population.

3. Conceptual Model

The literature review presented above leads us to the development of our conceptual model. The three categories identified are the following: consumer characteristics, characteristics related to cryptocurrencies, and propagation mechanisms. Each of these categories will be justified in the following section along with the associated assumptions.

Fig 9: Conceptual Model



- **Cryptocurrencies characteristics**

Innovation characteristics are related to the outcome and the effect of new products on consumers, which determine the amount of resistance generated and provide a great explanation to consumers' behavior towards innovation (Hosseini et al., 2016).

Kelly & Kranzerberg (1978) have developed two categories that are used to classify consumer-dependent and non-consumer-dependent factors. This classification is also found in Ram's model of resistance to innovation. It can be seen that the relative advantage, compatibility, perceived risk, complexity, effect on adoption of other innovations are considered to be consumer-dependent. The others are consumer-independent, which means that all these factors are expected to create the same type of resistance in the population. Therefore, as the interest of our procedure is to take into consideration the factors that influence decision making by consumers, it is on consumer-dependent factors that we will focus in particular.

- ***Relative advantage***

Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes (Rogers, 1987). In our situation, this implies a comparison of cryptocurrencies to traditional currencies. If cryptocurrencies are seen as a better alternative to what currently exists, consumer resistance will be reduced.

Hypothesis 1: The relative advantages negatively influence the resistance towards cryptocurrency's adoption

- ***Compatibility***

Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters (Rogers,1987). This criterion is more difficult to approach than the others because it differs for each individual. Again, if cryptocurrencies are perceived as being compatible with the values, past experiences and needs of consumers, the resistance factor is diminishing.

Hypothesis 2: The compatibility negatively influences the resistance towards cryptocurrency's adoption

- ***Perceived Risk***

Perceived risk refers to possible losses resulting from the decisions that the consumer has to make in uncertain contexts (Murray & Schlacter, 1990). It is a multi-dimensional concept. The consideration of one or the other dimension depends on the context and the innovation being studied. In the case of cryptocurrencies, it is interesting to consider the financial, legal, operational and adoption risks (Böhme & Abramova, 2016). Each of these constructs positively influence the resistance towards the adoption of cryptocurrencies.

- ***The financial risk (FR)***

Financial risk is associated with the risk of monetary losses related to the use of cryptocurrencies (Böhme & Abramova, 2016).

- ***The legal risk (LR)***

Legal risk refers to the vague legal status and the lack of comprehensive guidelines (Abramova & Böhme, 2016). The proposals made by the ESMA is a perfect example illustrating how the situation is still unclear. The first consists of regulation on a case-by-case basis, while the second option is to consider that activities relating to these assets do not fall within their mandate (Boland, 2020). In both cases, we see that these proposals do not reduce the risk that comes with the use of cryptocurrencies. Moreover, the first proposal also seems impossible given the number of cryptocurrencies present on the market.

We can also already see the implementation of different approaches around the world. While some nations have chosen to consider cryptocurrencies as legal, others are trying to restrict their use or consider them as fraudulent and illegal means of payment. These heterogeneous decisions do not facilitate and reinforce the complexity of setting up a global legislative framework as well as the legal risk perceived by potential users.

- ***The operational risk (OR)***

Operational risks are related to performance risks including the possibility of product failure. It refers to the elements leading to risks related to the infrastructure of cryptocurrencies as well as to the security assumptions (Duncan & Zhao,2018). In other words, to the possible failure of the blockchain system and the irreversibility of cryptocurrency transactions (Abramova & Böhme, 2016). It means that vulnerabilities related to cryptocurrencies can appear in the case of weaknesses related to security and protocol designs (Duncan & Zhao,).

- ***The adoption risk (AR)***

The adoption risk reflects the uncertainty regarding the future acceptance of cryptocurrencies by merchants (Abramova & Böhme, 2016).

Finally, we can also note that Jonker (2018) found out in her study that perceived risks and performance of crypto payments compared to other instruments for online payment may also influence the adoption decision.

Hypothesis 3: The perceived risk positively influences the consumers' resistance to cryptocurrency's adoption

- ***Complexity***

According to Ram (1987), the complexity of an innovation is rooted in two dimensions: the complexity of the idea - the ease of understanding the innovation - and the complexity of execution - the ease with which the innovation is implemented. Cryptocurrency being a recent concept for customers is probably still difficult to grasp. This has already led to situations where users make bad transactions, lose their wallet, or simply destroy it. Of course, the higher the complexity, the higher the consumer's resistance to cryptocurrency's adoption.

Hypothesis 4: complexity positively influences the resistance towards cryptocurrency's adoption

- ***Effect on Adoption of other innovation***

In some cases, the adoption of one innovation may have an inhibitory effect on the adoption of other innovations (Ram, 1987). This leads a consumer to opt for the best innovation. In other words, if they expected better in terms of the product, and are already satisfied with what they have, their level of resistance will be much higher. In the case of cryptocurrencies, it is necessary that the benefits it brings are clearly perceived. Indeed, traditional currencies and digital payment systems (PayPal, ...) represent a threat.

Hypothesis 5: The inhibitory effect on the adoption of other innovations positively influences the resistance towards cryptocurrency's adoption

♦ **Consumer's characteristics**

The set of models presented previously (Ram (1987), Yu & Lee (X), Davis & Richard Bagozzi (1989)) confirms the importance of consumer characteristics in the context of resistance to innovation. In this study, we will focus on two factors: motivation and self-efficacy.

- ***Motivation***

It is believed as being one of the central key factors driving consumer behavior (Barczak et al., 1997). The theory of intrinsic and extrinsic motivation developed by Deci makes it possible to distinguish two dimensions: the first one - intrinsic motivation - implies an action guided by the pleasure and interest felt by the person without expecting any external reward. The second one: extrinsic motivation is an action caused by a circumstance external to the person (a reward, a pressure, ...).

Hypothesis 6: the motivation negatively influences the resistance towards cryptocurrency's adoption

- ***Self-efficacy***

Self-efficacy is an important concept in understanding individual responses to technology (Luo & al, 2010). Consequently, this factor – defined as a person's perception of how easy or difficult it would be to carry out a behavior (Luo & al, 2010) – has been added to our model. The focus is on whether end users believe they have the required knowledge, skill, or ability to use a technology. (Luo &al, 2010). In other words, the capability to adopt it. It is therefore logical to hypothesize that the more people feel comfortable using cryptocurrencies, the less resistant they will be to their adoption.

Hypothesis 7: self-efficacy negatively influences the resistance towards cryptocurrency's adoption

♦ **Propagation mechanisms**

- ***Marketer-controlled propagation mechanism (i.e., mass media)***

Ram explains that when the innovation is introduced to the market, the Marketer-Controlled propagation mechanisms such as advertising and testimonials play an important role in reducing consumer resistance (Ram 1987). With Bitcoin's growing popularity and knowledge of its features, of which anonymity is a part, we observed that the first major users were in fact black markets such as Silk Road. These fraudulent uses mark the beginning of the development of a bad reputation of cryptocurrencies among consumers through multiple media articles and reports. Consequently, this has also led to many misconceptions.

Hypothesis 12: The effectiveness of marketer-controlled propagation mechanisms (such as mass media) positively influences the resistance towards cryptocurrencies' adoption

4. Survey's development

As mentioned earlier, an online questionnaire was conducted in order to collect a larger panel of data and obtain more relevant results. The Sphinx Declic software was used to carry out this project. The questionnaire was designed on the basis of the conceptual model developed previously and follows the same structure. An explanatory summary mentioning the subject of the study and information about the questions' formulation was added. It allowed the respondents to disregard the similarities between the questions and answer without being confused. The pilot survey and the final survey are available in the appendix section *(see annex 10 and 11).*

In view of the questions that will be asked, it is necessary that respondents have at least a basic knowledge of cryptocurrencies. Indeed, this condition is important since the survey will deal with characteristics of cryptocurrencies - Bitcoin in particular. People who have no knowledge would have difficulties to answer the survey accurately and will affect the validity of the final results.

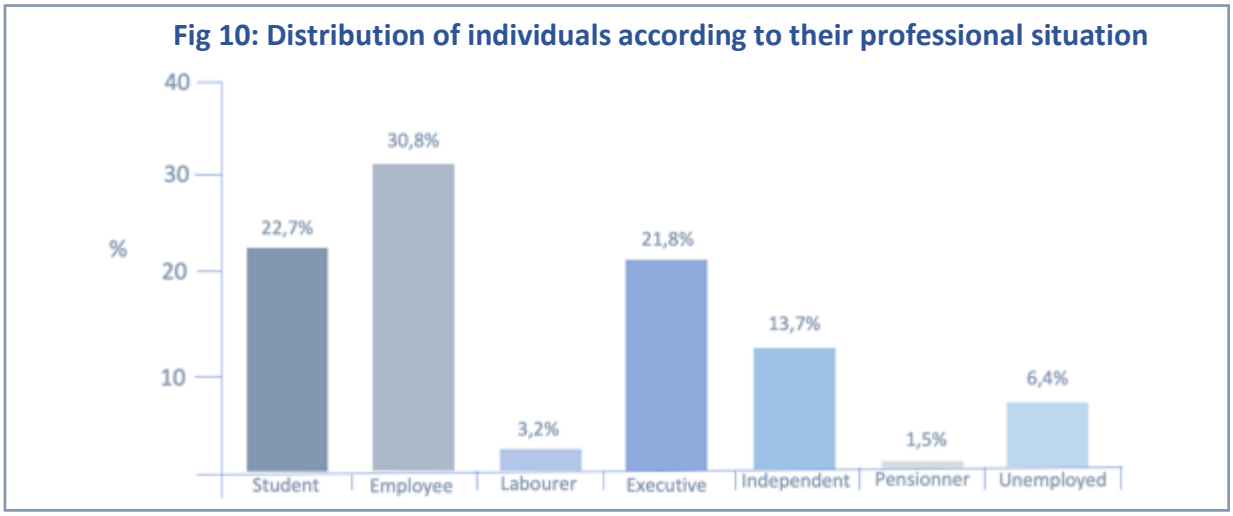
The questionnaire was firstly posted on four different places. The first one is Bitcointalk. It is a forum developed to discuss all topics related to Blockchain technology, Bitcoin, and other existing cryptocurrencies. It allows you to share your knowledge and get answers. The other three are “CryptoCurrency”, “Cryptocurrency”, and “Cryptocurrencies”, which are groups located on Facebook. About twenty responses were obtained from these places.

In order to compensate for the lack of responsiveness to the questionnaire, two collaborations were made. The first one with Bitcoin.fr, a French reference platform publishing articles related to Bitcoins. The second one with Cryptoast, a platform strongly active on Twitter and dedicated to cryptocurrencies. The results of this thesis will be published by the editors of these websites on both platforms.

5. Sample overview

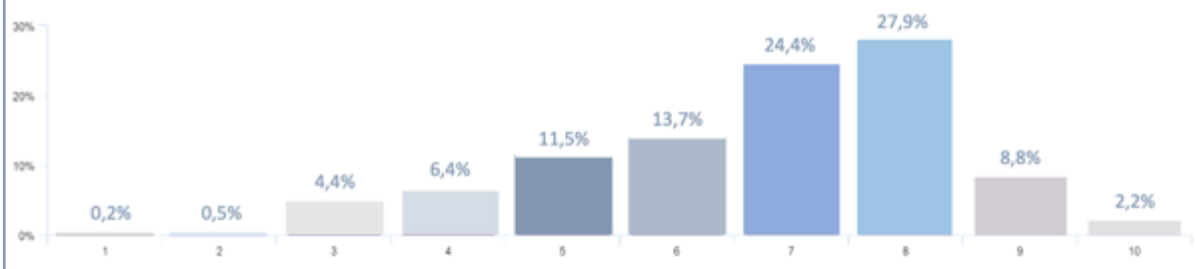
A quantitative survey should include between 200 and 450 participants in order to develop a relevant analysis (Zikmund et al., 2009). Therefore, the objective was to obtain a minimum of 200 responses. 436 responses were obtained between the date of submission of the questionnaire and its closing. Among the majority of countries represented, 81.1% of respondents are from France, 6.6% from Belgium, 3% from Switzerland, 2% from the United States and 1% from Germany. Moreover, it seems that men are the ones who visit cryptocurrency news platforms the most. Indeed, the panel is composed of 95.8% men and 4.2% women. There is also a real diversity in terms of age among our respondents and they have relatively different professions as shown in the following figure:

Fig 10: Distribution of individuals according to their professional situation



When it comes to individuals' level of cryptocurrency knowledge, the average is 6.7/10. Specifically, on a score that can range from 0 to 10, the breakdown is as follows:

Fig 11: Individual's knowledge on cryptocurrencies



Finally, we note that among our respondents, 94.4% have already owned or currently possess cryptocurrencies.

Among those who own them, we note that the majority of the acquisition took place between 2015 and 2021. Indeed, 44% of respondents have invested after 2020 and 43.5% between 2015 and 2019. Between 2011 and 2015, 11.1% of them invested, compared to 1.3% before 2011.

The reasons why individuals invest are quite varied. It is worth noting, however, that investment remains the most important driver of cryptocurrency acquisition. Security, flexibility, privacy and lower costs follow closely behind.

Table 1: reasons to own cryptocurrencies

Why did you start using cryptocurrencies?	Investments purposes	90,4%
	Security	27,2%
	Flexibility	22,3%
	Confidentiality	21%
	Lower costs	12,4%

Individuals who have not yet invested in cryptocurrencies overwhelmingly mention their need for more information about how cryptocurrencies work before jumping in. This is followed in second place by the need for more businesses to accept cryptocurrencies. The need for regulation appears in third place followed by the need for more people to use them.

Table 2: Individual's need to own cryptocurrencies

What do you need to start using cryptocurrencies?	More information on how cryptocurrencies work	73,9%
	More retailers accepting them	43,5%
	Regulations	30,4%
	More people using them	17,4%

Part III. Empirical Findings

Chapter 4: preparation and analysis of the results

6. Preliminary analysis

The objectives of preliminary data analysis are to edit the data to prepare it for further analysis, describe the key features of the data, and summarize the results (Blischke, Wallace et al., 2011). Therefore, we will first perform an exploratory factor analysis followed by a reliability analysis in order to be able by the end to analyze the data.

6.1. Exploratory Factor Analysis

The Exploratory Factor Analysis (EFA) is used when a researcher wants to discover the number of factors influencing variables and to analyze which variables 'go together' (DeCoster, 1998). More generally, the goal of the EFA is to be sure that the variables corresponding to the items we are using for measuring each concept are actually measuring the intended concept. Moreover, because EFA is a multivariate statistical approach, it is appropriate for reducing at the end the unnecessary factors and evaluating the construct validity of a measurement scale (Williams et al., 2010).

- **Size of the sample**

Firstly, it is necessary to identify if it is possible to show latent constructs and reduce the number of variables using our sample. We'll note that our data are continuous and based on a likert scale of 7 points ranging from strongly disagree to strongly agree.

Regarding the adequacy of the sampling size, Pearson and Mundfrom (2010) summarize in their study recommendations made by researchers when practicing a factor analysis. The results are the following:

Authors	Rule
Kline (1984)	**At least 100 people are necessary to conduct the analysis**
Comrey and Lee (1992)	A scale can be used: <50- Very poor <100-Poor <200-fair <300-Good <500-Very good >1000- Excellent
Cattell (1978)	It is necessary to have between 3 and 6 subjects per variables
Gorsuch (1983)	Two rules can be followed: at least 100 are needed to conduct the analysis and the ratio related to the number of subjects per variable has to be 5

Table 3: Sample recommendations

As mentioned previously, our analysis involves 45 different variables categorized according to the factors they wish to assess. The number of responses obtained when the questionnaire was shared was 409. We are therefore within the conditions necessary for conducting this analysis.

- **Respect of the postulates: KMO and Bartlett's test of sphericity**

In order to assess the factorability of the data (i.e., validate the suitability of our data for running a factor analysis) and ensure sampling adequacy, Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy are applied (Panuwatwanich, Stewart & Wipulanusat, 2017).

The Kaiser-Meyer-Olkin goes from 0 to 1 and need to be higher than 0.5 in order to be suitable.

Regarding the Bartlett's test of sphericity, it needs to be significant ($p<0.05$) to attest that there is some level of correlation between our items. It is an important value because having uncorrelated items means that they can't be used to define the same factor.

The results obtained for our items can be found in the appendix section *(see annex 3)* and meet the necessary requirements.

- **Principal Component Analysis**

A principal component analysis with a varimax rotation was used for each variables of our conceptual model – with the exception of demographic variables. PCA was chosen as a data extraction method because its primary objective was to summarize and reduce data as well as define the factors needed to represent the structure of a variable (Panuwatwanich, Stewart & Wipulanusat, 2017).

When analyzing the communalities – the % of the variance of the item that is accounted for by the factor solution- several items had to be dropped. The EFA had to be reconducted until the desired results were obtained. The items RA5, FR2, CO3, CO4, COMP3, COMP4, ATT2, PM1, PM4, POST3 have been dropped. Note that when dropping an item, the postulates mentioned previously were still respected each time.

The results of this analysis can be found in the appendix section *(see annex 3).*

6.2. Reliability Analysis

Now that the criteria are satisfied regarding the EFA, a reliability analysis is undertaken. Cronbach's alpha is one of the most used estimators for measuring internal consistency reliability. It ranges from 0 to 1 and is considered to indirectly indicate the degree to which a set of items measures a single unidimensional latent construct (Horodnic, Ursachi & Zait, 2015). We're going to compute it for each dimension of the scale.

In other words, we take all the items that load on the same dimension of the construct for each Cronbach's analysis. The more the estimator is close to 1, the more the reliability of the scale is high. A general accepted rule is that of 0.6-0.7 indicates an acceptable level of reliability, and 0.8 or greater a very good level. However, values higher than 0.95 are not necessarily good, since they might be an indication of redundance (Hulin, Netemeyer, and Cudeck, 2001).

The results of our analysis are summarized in the following table. Note that the complete results can also be found in the appendix section *(see appendix 4).* It can be seen that the value of the majority of our variables is higher than 0.7. which indicates that the scales are reliable.

For the results obtained with a coefficient greater than or equal to 0.6, the items were still retained. This decision was justified by the discrepancies in the literature regarding the scale evaluating Cronbach's alpha.

There are two cases. In the first case, a value of 0.6 is considered questionable. In the second case, a value between 0.6 and 0.7 is considered acceptable. In both cases, this does not lead to the elimination of the construct.

Let us also note that in the case of resistance, the different categories defined at the beginning: postponement, opposition, rejection, resistance to change, only serve to evaluate it. This is why in the following table: it is the degree of reliability of the concept of resistance that is mentioned and not that of each of the preceding categories.

Table 4: Reliability Analysis using Cronbach's Alpha

	Factors	Cronbach's alpha
Innovation Characteristics	Relative advantage	0,823
	Perceived Risk	0,717
	Complexity	0,734
	Compatibility	0,844
	Effect on adoption of other innovation	0,6
	Motivation	0,796

Consumer's Characteristics	Self-efficacy	0,876
Characteristics of propagation mechanism	Marketer-controlled Propagation mechanism (i.e., Mass media)	0,904
Resistance		0,799

Finally, Cronbach's analysis was also performed on the different categories of items used to evaluate the components of perceived risk: financial risk, legal risk, operational risk and adoption risk. This was also done for resistance and its components: postponement, opposition, rejection, resistance to change.

The results can be found in the appendix section and are summarized below:

Perceived risk	Financial risk	0,67
	Legal Risk	0,72
	Operational risk	0,6
	Adoption risk	0,734
Resistance	Postponement	0,756
	Opposition	0,643
	Rejection	0,765
	Resistance to change	/

Note that resistance to change was only assessed through one question. Therefore, Cronbach's alpha was not included.

6.3. Final construction of the variables and related questions

With our factor and reliability analysis complete, we can finalize the constructs that will be used in our analysis to evaluate each resistance factor.

The following table shows the information finally used. For ease of use, each construct has been coded.

Table 5: Final construct of the variables			
	Factors	**Construct Variables**	**Questions**
Innovation Characteristics	Relative advantage	RA1	Using cryptocurrencies could improve the way I do my transactions
		RA2	Using cryptocurrencies could give me a greater control over my finance
		RA3	Using cryptocurrencies could enable me to accomplish my transaction more quickly
		RA4	Using cryptocurrencies enhances the effectiveness of my
	Perceived Risk	FR1	I fear security vulnerabilities or malfunction of exchanges or wallet providers
		FR3	I fear losses due to counterparties failing to meet contractual payments or settlement obligations
		FR4	I fear losses due to security incidents (e.g., lost passwords, malware)
		LR1	I fear the legal uncertainty for holders of cryptocurrencies
		LR2	I fear the possible government intervention restricting the use of cryptocurrencies
		OR1	I fear the losses due to modifications to or vulnerabilities in the Bitcoin protocol
		OR2	I fear the lack of built-in mechanisms to reverse confirmed transactions
		AR1	I fear the lack of adoption in commerce in the long term
		AR2	I fear the lack of interoperability with other services

	Complexity	CO1	I think that cryptocurrencies are complex to use
		CO2	I think that understanding and using cryptocurrencies requires more skills and effort
	Compatibility	COMP1	Cryptocurrencies fit with my needs
		COMP2	Cryptocurrencies fit with my lifestyle
	Effect on Adoption of other innovation/ Attitude towards existing products	ATT1	I prefer using traditional currencies
		ATT3	I am quite satisfied and have a favourable attitude regarding the current financial system and the way I use "traditional" money such as € to purchase
Consumer's Characteristics	Motivation	MOT1	Using cryptocurrencies is entertaining and exciting
		MOT2	Using cryptocurrencies would be more beneficial for me
		MOT3	I need cryptocurrencies for their functions/features
		MOT4	I have the intention to use cryptocurrencies in the near future
	Self-efficacy	SE1	I know how to use cryptocurrencies
		SE2	I would feel comfortable using the Cryptocurrency payment on my own
		SE3	I am confident of understanding and using cryptocurrency payment
		SE4	If I wanted to, I could easily operate any of the steps in the Cryptocurrency payment technology on my own even if I have never used it before
Characteristics of propagation mechanism	Marketer-controlled Propagation	PM2	I have a good impression of cryptocurrencies from the media

	mechanism (i.e., Mass media)	PM3	If the media suggest using cryptocurrencies, I will use them
Resistance		POST1	I will wait for using cryptocurrencies until it proves beneficial for me
		POST2	I need to clarify some queries and justify the reason to go for cryptocurrencies
		OPP1	I fear of wasting my money by going for cryptocurrencies
		OPP2	I have some complaints/objections against cryptocurrencies
		REJ1	I don't need cryptocurrencies
		REJ2	Cryptocurrencies are not for me
		REC1	I fear of the changes that cryptocurrencies may impose on me

6.4. Descriptive analysis

The following table presents the descriptive statistics of our sample.

Table 6: descriptive statistics

	N	Minimum	Maximum	Moyenne	Ecart type
Relative_Advantage	409	1,00	7,00	5,6944	1,14382
Financial_Risk	409	1,00	7,00	3,9079	1,28229
Legal_Risk	409	1,00	7,00	5,0990	1,51967
Operational_Risk	409	1,00	7,00	3,0562	1,35238
Adoption_Risk	409	1,00	7,00	3,2738	1,58101
Complexity	409	1,00	7,00	4,2543	1,42031
Compatibility	409	1,00	7,00	5,3081	1,30204
Attitude	409	1,00	7,00	3,3032	1,36564
Motivation	409	1,00	7,00	5,5758	1,10538
Self_efficacy	409	1,00	7,00	5,5947	1,25454
Propagation_mechanism	409	1,00	7,00	3,4804	1,51005
Resistance_Postponement	409	1,00	7,00	3,1516	1,53959
Resistance_Opposition	409	1,00	7,00	2,3484	1,35093
Resistance_Rejection	409	1,00	7,00	1,8839	1,19305
Resistance_to_change	409	1,00	7,00	2,0269	1,43204
N valide (liste)	409				

7. Final Analysis

As previously mentioned, in order to carry out the analysis of the results to be able to confirm or refute the different hypotheses put forward previously, different tests are implemented using the SPSS statistical tool.

7.1. Methodology

7.1.1. Multiple linear regression

To answer our hypothesis and respond to our research questions, a multiple linear regression will be performed as we are in presence of one dependent variable and more than one independent variables (Güler & Uyanik, 2013). This will allow us to generate an equation that highlights the statistical relationships between these variables and detects those that are significant in explaining the dependent variable.

This multiple linear regression will include all variables (except demographic variables) to measure their overall effect on resistance. The method chosen here is stepwise because it eliminates variables that could potentially be redundant.

7.1.2. Comparison of means: t-test and Anova

Regarding the demographic variables different tests will be performed in order to determine whether there is a significant difference between two or more groups with respect to the dependent variable: the resistance to the adoption of cryptocurrencies.

Three ANOVA tests are going to be performed for measuring the influence of the age, the profession and the salary on the resistance. It allows to identify if there are significant differences between the means of different independent groups regarding the dependent variable. In other words, we can identify whether belonging to a certain age profession or salary category has an impact on resistance to cryptocurrencies.

In order to perform it, the different age categories as well as the possible professions of the respondents were coded as follow:

Table 7: Codification of our categorial variables			
CODE	AGE	PROFESSION	Salary
1	Before 1965	Executive	Under 1500€
2	1965-1979	Employee	1500-1999€
3	1980-1989	Student	2000-2499€
4	1990-1999	Independent	2500-2999€
5	From 2000	Laborer	3000-3999€
6	/	Pensioner	4000-4999€
7	/	Unemployed	5000-10.000€
8	/	/	Over 10.000€

Although this has not been taken into consideration in the developed framework, an independent t-test sample is also performed to determine if the gender influences the cryptocurrencies' resistance. The gender being a binary variable, we have coded female as 1 and male as 0 in order to be able to identify if there is a significant difference between the means of the groups.

7.2. Analysis of the results

The following table shows the results of the multiple linear regression. The variables identified as significant are self-efficacy, motivation, adoption risk, financial risk, compatibility, propagation mechanism, effect on adoption of other innovation. The sign of these variables with our dependent variable: resistance to cryptocurrencies' adoption, is also included.

Table 8: Overview of the multi-linear regression results		
Facteurs	Sig.	P-value
Self-efficacy	<0,001	-0,223
Motivation	0,001	-0,160
Adoption risk	<0,001	0,100
Financial Risk	0,001	0,103
Compatibility	0,012	-0,100
Propagation mechanism	0,042	0,049
Attitude/effect on adoption of other innovation	0,049	0,066

The Anova table obtained from our analysis on SPSS allows us to conclude that the introduced variables contribute to significantly improve the variable explained by the final model, the p-value being lower than 0.05. The model being significant, we can also look at the summary table of the models available in the appendix *(see annex 5).*

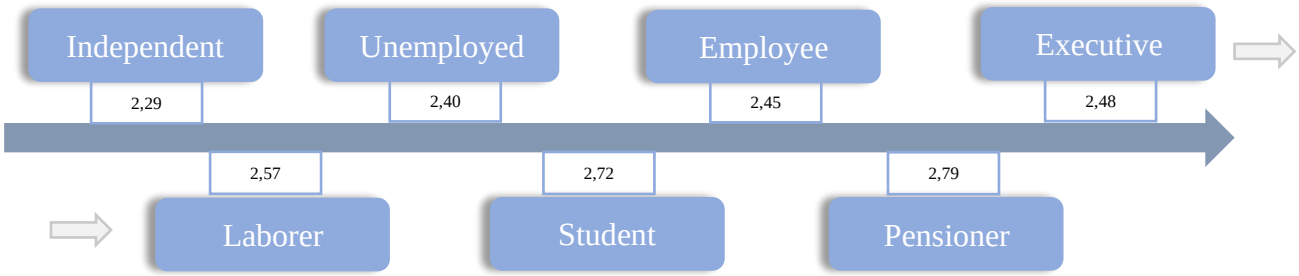
First, we note that the multiple correlation R suggests that the data are satisfactorily fitted to our model. Indeed, the values oscillate between 0.6 and 0.7.

Second, we find that moving from one model to the other systematically improves the value of R2. In other words, moving from the first model to the last, allows us to explain the resistance to cryptocurrencies - dependent variable- more significantly.

Finally, it can be noted that the final variables selected explain about 48.1% of the resistance.

- **Impact of the profession**

In order to test and verify whether an individual's occupation has an impact on resistance to cryptocurrencies, we will use ANOVA. The full results of this analysis are provided in the appendix *(see annex 6).* First, it is interesting to take a look at the descriptive statistics obtained from the analysis.



We can see that the average resistance level to cryptocurrencies remains fairly similar between our different groups. It ranges from 2.29 for independents to 2.79 for pensioners. Still, we need to see if these results are significant.

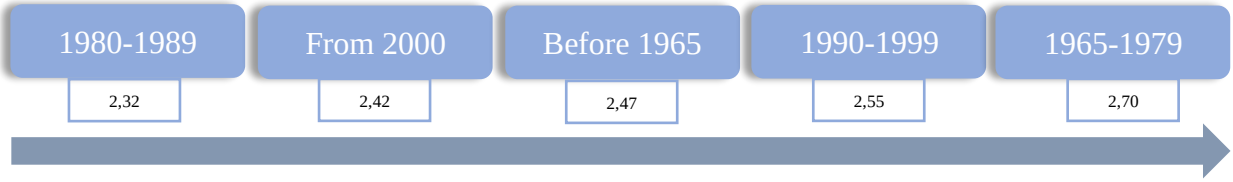
A necessary condition for the ANOVA test is that the variances of each group are equal. In order to verify this premise, we will use Levene's statistic. The objective is to obtain a result that is not significant because this would imply that there is a difference between the variances. Since the significance level is always set at $p<0.05$, we can conclude in our case that the test is not significant ($p>0$ .05) because we obtained a result of 0.130. The null hypothesis of equality of variances is therefore not rejected. The variances are considered similar and the ANOVA test can be considered as robust.

We can then proceed to the analysis and interpretation of the variance using ANOVA. We need to look at the F-value which is 1.304 and identify if it is significant. We find a result of 0.254 which is therefore greater than 0.05. We can therefore conclude that there is no significant difference between the means of the different categories defined for our variable.

- **Impact of the age**

In the same way as we did for occupation, an ANOVA test *(see annex 7)* was conducted to identify whether belonging to a certain age category has an impact on resistance.

The descriptive analysis obtained gives us the following results:



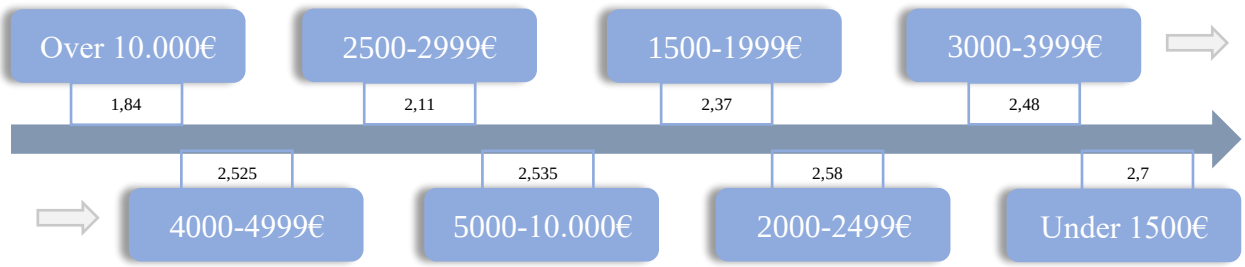
We can see that the means of our different age categories remain relatively similar. We are going to deepen our approach again by using the table relating to the homogeneity of variances. This table indicates that the Levene statistic is 1.657 with a significance level of 0.159. The significance level being set at $p<0.05$, we can conclude that the test is not significant. The null hypothesis of equivalence of variances is not rejected.

We can conduct the ANOVA test. The table obtained shows us an F value equal to 1.734. The significance level is 0.142. Therefore, we can conclude that there is no significant difference between the means of our age categories towards resistance to cryptocurrencies.

- **Impact of the salary**

To identify whether belonging to a salary category has an impact on resistance, we also use ANOVA. The detailed results of the analysis are presented in the Appendix *(see annex 8).*

Again, we will take a look at the descriptive analyses obtained:



At first sight, we can already see quite important differences between our categories. We go from an average of 1.84 for people earning more than 10.000€ to 2.7 for people earning less than 1500€.

The premise of equality of variances was verified using Levene's statistics. The significance level is always set at $p<0.05$. We need to look at the last column of the table presented in the appendix to know if the test is significant or not. We obtain a result of 0.160. As the test is not significant ($p>0.05$), we cannot reject the H0 hypothesis of equality of variances. We therefore consider them to be similar and can continue with the interpretation of the ANOVA table.

The table shows us a significance level of 0.01 which is less than 0.05. We can therefore conclude that there seems to be a significant difference between the means of the different categories defined for salary.

In other words, the salary earned by an individual would seem to influence his or her resistance towards cryptocurrencies.

- **Impact of the gender**

We will now test whether gender - male/female - has an impact on resistance to cryptocurrencies. The results of the analysis are in the Appendix *(see annex 9).*

17 observations were obtained for women compared to 392 for men. As for the average, it is 3.7353 for women and 2.4477 for men. Statistically speaking, we want to test whether the null hypothesis that the mean for women is equal to the mean for men holds. To do this, we will use the independent samples test.

Before testing the difference between two means, we must first check whether the variances of the two samples are equal or not. To do this, we will use Levene's statistic. We notice that F is equal to 15.617 and p is less than 0.001. The null hypothesis is therefore rejected, and we must consider that the variances are significantly different. This result also makes sense if we look at the standard deviation. Our two values are very different for men (0.96) and for women (1.45).

Faced with this result, we have to read the second line of the table. Since the t-value of our test results in a significance value that is less than 0.05, we reject the null hypothesis in favor of the alternative hypothesis H1, and we can conclude that men and women behave differently in terms of resistance to cryptocurrencies.

It should be noted, however, that there is an extremely different proportion between men and women in our sample. These results should therefore be considered with caution.

Part IV. Discussion

8. Principal Findings

As a reminder, the objective of this research is to identify possible barriers to the adoption of cryptocurrencies. To do this, we based ourselves on a conceptual model to illustrate the factors to be tested. This model organized the variables into three categories: the characteristics of the cryptocurrencies, the mechanisms of propagation, and the characteristics of the consumers composed of psychological and demographic variables.

The hypotheses having been verified via our statistical analyses; we will be able to go into more detail in this section.

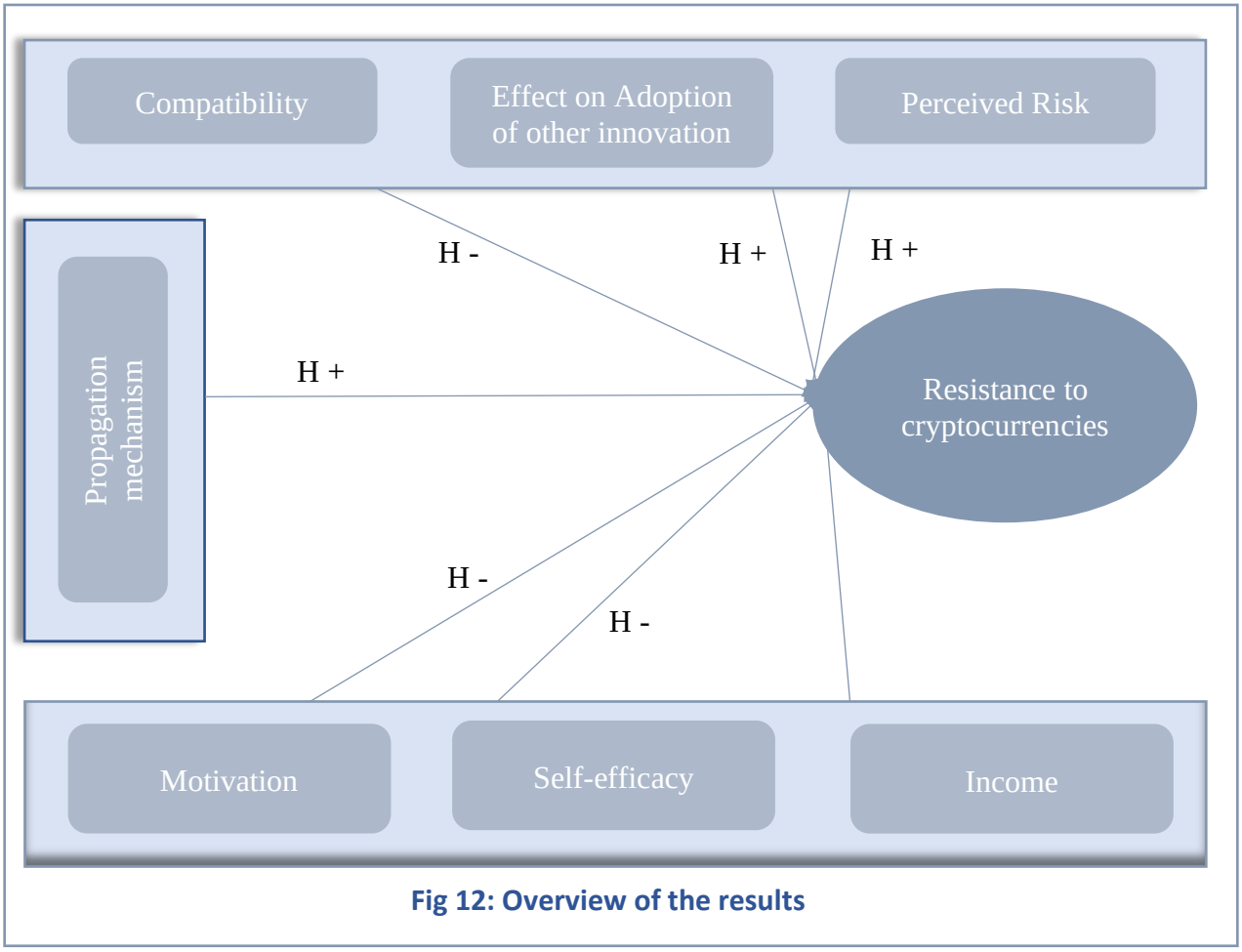


Fig 12: Overview of the results

The previous model illustrates the elements that can be explained and interpreted through our analysis. In other words, the empirical data collected for this study do not confirm the assumptions made earlier about relative advantage and complexity.

With regard to the age and the profession, it would appear from the results that an individual's membership in a certain category of either variable does not have an impact on resistance. Therefore, these are not included in our final model.

8.1. Relation between cryptocurrencies' characteristics and resistance

- **Compatibility**

Let's recall that the level of compatibility is related to certain factors on which the adoption of the innovation will depend, such as the name of the innovation, the associations that potential users will make with other innovations or the compatibility with their value system or needs (Caneva, 2019).

We tested this construct and found out that the hypothesis related to the relation between compatibility and resistance to innovations have indeed a negative relationship. Our results are therefore in line with previous research. We can cite Saaksjarvi (2000), Lin (2011), or Tan & Teo (2000), whose work mentions the presence of a negative relationship between compatibility and resistance to innovations as examples.

- **Attitude towards existing products / effect on adoption of other innovation**

We hypothesized a positive relationship between the adoption effect on other innovations. Indeed, consumers who are satisfied with existing products will be more reluctant and resistant to the changes that innovation can impose on them and will not necessarily want to go towards it (Abbas, 2016). In other words, the more favorable consumers' attitudes are to the existing system, the more resistant they will be to the adoption of cryptocurrencies. This hypothesis was also verified via our analysis.

- **Perceived risk**

The perceived risk is a variable that can be dissociated into different constructs. We had identified financial risk, adoption risk, operational risk and legal risk. Of these different measures, only financial and adoption risk were found to be significant.

Defined and used by Böhme and Abramova (2016), adoption and financial risks allowed us to measure, respectively, whether uncertainties about the use of cryptocurrencies by businesses and financial losses related to cryptocurrency acquisitions have a positive influence on innovation resistance. In other words, these variables can lead to innovation rejection. The results obtained during our analysis confirm our hypotheses and are in agreement with previous research.

8.2. Consumers' characteristics regarding resistance to cryptocurrencies

♦ Motivation

Motivation is a key factor in explaining consumer behavior when faced with new innovations (Li et al., 2019).

We hypothesized that there was a negative relationship between motivation and resistance to innovation. This hypothesis was verified through our analysis.

♦ Self-efficacy

The results obtained for the variable self-efficacy, or an individual's perception of his or her ability to take control of an innovation in order to accomplish his or her activities, were found to be consistent with previous research. Ram and Sheth (1989) conceptualized the behavior of this variable towards the resistance to innovation. The work of Park and Chen (2007) also aligns with their findings and mentions the importance of the impact of self-efficacy in the choice of rejecting or adopting an innovation. We can conclude that indeed, there is a negative relationship between self-efficacy and consumer resistance (Abbas, 2016) to the adoption of cryptocurrencies.

♦ Income

Previous research shows that there are different degrees of resistance among consumers and that age, education and income variables regulate the relationship with resistance to innovation. These elements confirm the importance of taking demographic variables into account. The results obtained in our analysis for the revenue are in line with theories related to resistance to innovation taking into consideration income as a demographic variable.

We indirectly hypothesized through our ANOVA analysis that belonging to a certain income category influences resistance. This hypothesis is therefore confirmed.

8.3. Links between propagation mechanisms and resistance

Consideration of the means of communication is also an important element influencing the decision-making process of individuals regarding the adoption of an innovation. Let's recall that they are developing according to (Cornescu & Adam, 2013)

- The nature of the market
- Where the innovation is launched

And finally, within the propagation channel characteristics: credibility, clarity, similar data source information. The results obtain for the propagation mechanisms led us to believe that

there is a positive relationship between it and the resistance. Therefore, it confirms our hypothesis and is in align with the hypothesis set by Ram (1987) and Cornescu & Adam (2013).

8.4. Weaknesses of the study

The way in which our research was conducted has certain weaknesses that need to be mentioned.

Firstly, the sample selected may not fully represent reality for three reasons:

1. *The survey developed required the participation of people with a basic knowledge of cryptocurrencies in order to get the most accurate answers possible.*

As mentioned in this paper, the questionnaire was therefore shared in collaboration with two platforms specialized in cryptocurrencies. Although this allowed us to obtain an adequate sample size and people with a minimum of knowledge, there is a significant risk. Indeed, we can expect that the people frequenting these sites are already very favorable to cryptocurrencies. Furthermore, if we look at the descriptive analyses of our results, we see that a majority of the participants have already invested in cryptocurrencies. Therefore, the perception of the barriers to cryptocurrency adoption may appear different than it actually is among the general population.

This may also explain why our model could only explain 48.1% of the resistance to cryptocurrencies. The individuals interviewed were already more open to these monetary innovations.

2. *The majority of individuals who participated in the survey were men*

As a reminder, we obtained 95.8% of responses from men and only 4.2% of responses from women. It would have been interesting to get a larger number of responses from women in order to have a better representation of the reality especially since we are analyzing what prevents individuals from adopting cryptocurrencies. Having data from women could have allowed for a more thorough and complete analysis.

3. *A part of the population has not been taken into account*

We used social networks and internet platforms to share our questionnaire. By making this decision, we automatically exclude a part of the population and create a bias in our research.

Secondly, 48.1% of the resistance could be explained by the variables that were found to be significant and could be selected. This problem can also be observed from two different perspectives:

- *The formulation of the conceptual model*

During its formulation, a selection was made to choose the variables that would be included in the model. In other words, other variables that could have had an influence on the resistance to cryptocurrencies were not taken into consideration.

- *The formulation of the survey*

As we have seen, each variable was studied through a series of questions analyzed on a 7-point Liker scale. Each set of questions was tested to make sure that they correctly measured the related variable. One weakness of the questionnaire that was unfortunately not addressed was the need to have more than 4 questions for each item in order to be sure to obtain an accurate assessment of each variable and more reliable data. The questions selected to measure each item came from previous research and were therefore verified. However, a second check would have been welcomed.

Part VI. Conclusion

9. Overview of the conducted research

The question of the challenges related to the adoption of cryptocurrencies had been broken down into different sub-questions that we can now answer. These were:

1. The identification of cryptocurrencies location in terms of diffusion

We wanted to know whether cryptocurrencies are on the right track with regard to competing with our current currencies in payment transactions.

2. The identification of the barriers i.e., factors holding back cryptocurrencies expansion and more precisely adoption

This analysis allows the identification of the elements that need to be focused on to promote a wider diffusion within society. Note that this issue was also studied from the perspective of consumer resistance. Indeed, as we stated in the introduction of this paper, one of the main shortcomings of current research is that very little of it addresses the adoption of cryptocurrencies from a human perspective. Yet, for mass adoption to occur, it is important to pay close attention to this aspect by studying the behaviors within the population. This study therefore illustrated in a certain way how society currently perceives cryptocurrencies.

Theories related to resistance to technological innovations gave us the necessary framework to establish a conceptual model that served as a basis for the development of our hypotheses and the identification of potential factors to be tested.

We studied the challenges related to the adoption of cryptocurrencies through the collection of data obtained from the population.

Based on the data collected via our questionnaire, we identified different variables that could influence resistance to the adoption of cryptocurrencies. These variables are compatibility, effect on adoption of other innovations, perceived risk, propagation mechanisms (i.e., mass media), motivation, self-efficacy and the income.

9.1. Implication of the results and recommendation

The following point will allow us to go a little further with regard to the conclusions drawn for each of the variables mentioned as well as the question relative to the location to cryptocurrencies in terms of diffusion.

9.1.1. Identification of cryptocurrencies location in terms of diffusion

The first part of this work identified the location of cryptocurrencies in terms of propagation. We had been able to observe that the Chasm stage still needed to be passed. This is a rather complicated stage that will certainly lead to the appearance of dominant currencies. This is what we can already observe at the moment. In order to pass the Chasm, the rest of our analysis is particularly interesting. By identifying the factors holding back the adoption of cryptocurrencies, it is possible to define the elements on which it is necessary to concentrate to achieve a more important and easy diffusion within the population. The following point will introduce this idea.

9.1.2. Identification of the factors holding back cryptocurrencies expansion

Since we have been able to establish which factors in our model are related to cryptocurrency resistance, we can also highlight the implications of these results and make recommendations in order to improve their diffusion.

The first dimension that can be worked on is *perceived risk*. Our statistical analyses led us to consider two of its components. It is on the basis of these that we will make our recommendations

- Adoption risk

Adoption risk was illustrated by the fear that businesses would not adopt cryptocurrencies in the long run and the lack of interoperability of cryptocurrencies with other services. Therefore, in order to reduce this risk, it is necessary to play on the communication of clear and complete information. More precisely, it is essential to highlight the safe platforms on which it is already possible to use cryptocurrencies. Many stores accept these payment methods. There are also platforms that allow you to exchange your cryptocurrencies for gift cards to be used within traditional stores. In addition, we had obtained as a necessary reason for using cryptocurrencies in our questionnaire "more retailers accepting them" in second place with a result of 43.5%.

We can easily see that there is still a lack of information provided to consumers.

- Financial risk

If we focus now on financial risk, the results of the survey showed rather mixed results with the exception of the results obtained with regard to fears about losses due to security incidents.

In the questionnaire, we mentioned the loss of passwords as an example. It would seem that the fears that are forming towards the use of cryptocurrencies are not due to the flaws that can occur in the system itself but to problems due to the individual themselves and their possible misuse of the system. Better communication about the use of cryptocurrencies and situations to avoid, for example, could help alleviate this problem. It is a matter of people getting used to and "trained" correctly in the use of these new currencies.

This point can also be related to the results obtained from the question "what would it take for you to use cryptocurrencies". We had obtained an overwhelming majority with 73.9% for the answer "More explanations on how cryptocurrencies work".

If we make the link with Roger's curve, it is therefore necessary to work on these points in order to overcome the Chasm and move towards the early majority. Indeed, we mentioned previously that "the early majority is characterized by a reasonable aversion to risk.

Regarding *compatibility,* we have seen that there is indeed a relationship between it and resistance to cryptocurrencies.

The relationship identified highlights the need to identify the values and expectations of the population in order to align cryptocurrencies with them. It would seem that the results of our survey show that the individuals surveyed tend to see cryptocurrencies as compatible with their values, their lifestyle and think that it is a good complement to traditional currencies. However, we also notice that cryptocurrencies would tend to change their habits. Given that the individuals interviewed are individuals who have already invested in cryptocurrencies and are naturally interested in them, it would be necessary to make sure that "ordinary" people can take the plunge without this change of habit being perceived as too important. By ordinary people, we can refer here to the early and late majority as they are defined by Rogers.

We can assume that this compatibility will improve more and more with the improvement of user experience. Indeed, when we compared the evolution of cryptocurrencies with the evolution of the internet, we highlighted the increasing improvement of exchange platforms. They are becoming user-friendly and look more and more like the traditional applications that we already use every day to make payments. The change in terms of habit can therefore already be reduced by this dimension. A second element in dealing with the concept of change is the growing acceptance of cryptocurrencies by retailers.

The third dimension we can work on is the inhibitory effect of an innovation on the adoption of other beneficial innovations.

As Ram's said the higher the inhibitory effect of an innovation on the adoption of other beneficial innovations, the higher the consumer resistance to this innovation (Ram, 1987). This

hypothesis was aligned with the results of our analysis which means that if individuals perceive the current financial system as sufficient to meet their needs, their resistance to adopting cryptocurrencies is likely to be much greater. A spread of its use requires that the advantages of using cryptocurrencies over using traditional currencies be highlighted.
This problem was also identified in the research conducted by ING in previous years. Cryptocurrencies are not really perceived as necessary and the optimism felt by people was rather weak.

The fourth dimension is motivation. As we quoted before,

"because Bitcoins users do not benefit from any incentive, their participation in the system is conditional upon the system ability to provide a transactional service at a reasonable cost and acceptable quality (Gürcan, Del Pozzo et al., 2017)".

This sentence illustrates the points on which it is necessary to pay attention. We can see that the motivation of users depends on the benefits that cryptocurrencies can give them. Once again, it is necessary to differentiate them from traditional forms of payments.

In the case of innovators and early adopters, this is an element that is easier to address. Indeed, they are more easily attracted by innovations and like to test them. We could consider that the majority of participants using cryptocurrencies in our research belong to one or the other of these categories. Moreover, the results obtained from our questionnaire help to confirm this. Indeed, participants still overwhelmingly find cryptocurrencies more beneficial and entertaining to use. And many plans to use or continue using cryptocurrencies in the future.

10. Unanswered questions and future research

We mentioned before that 48.1% of our model allowed us to explain resistance to cryptocurrencies. In the future, it would be possible to work on two elements:

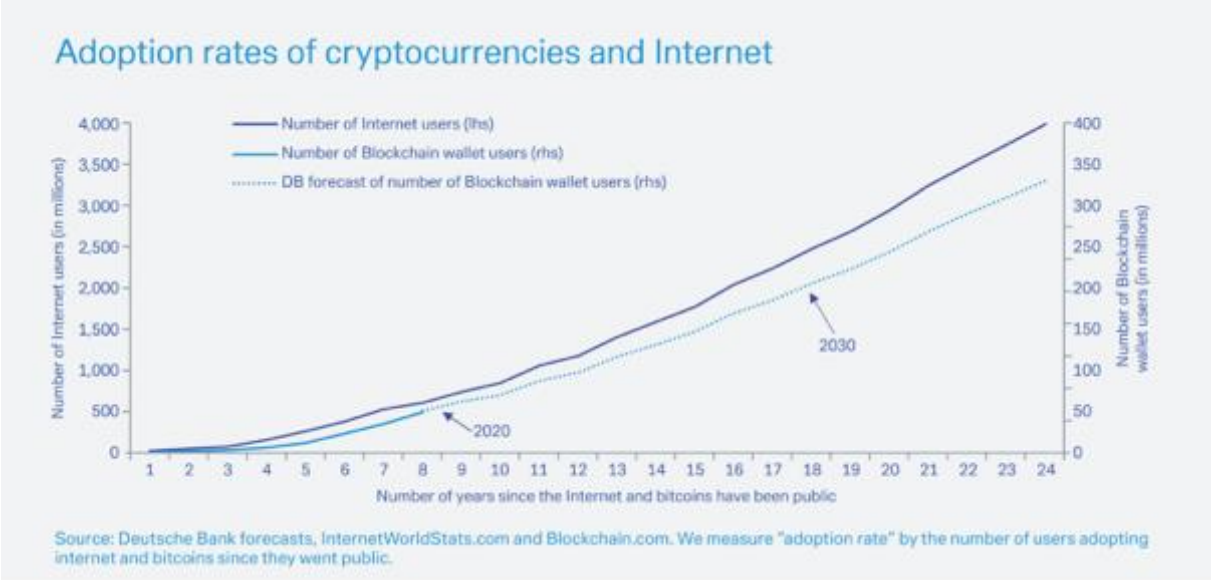
1. Conducting a similar research to compensate for the mentioned weaknesses in order to determine if the variables that were rejected can explain the resistance. Moreover, in this type of research, the wording of the questions play an important role in the results that emerge.

2. Adapting the model used in our research. We had made a selection in order to create our conceptual model. This one can be modified in order to evaluate other variables that could improve and explain it better.

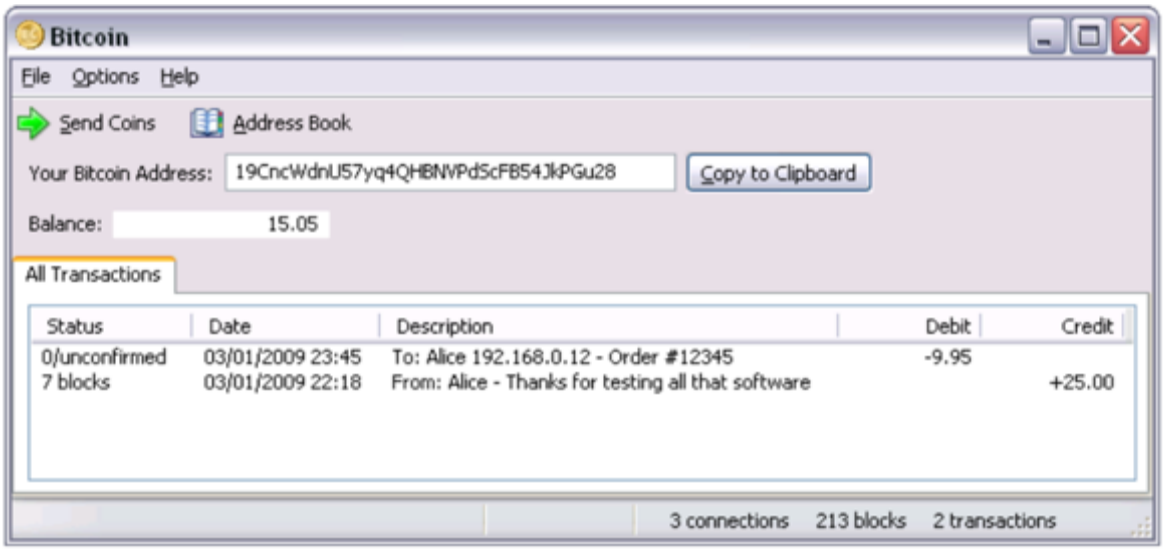
Finally, further work on ways to deal with the variables assessed as influencing resistance would also be interesting as there is currently a lack of information on this subject in the literature. Let's also note that in this type of work, it is also interesting to conduct the research multiple times in order to see how the behavior of the population evolves over time.

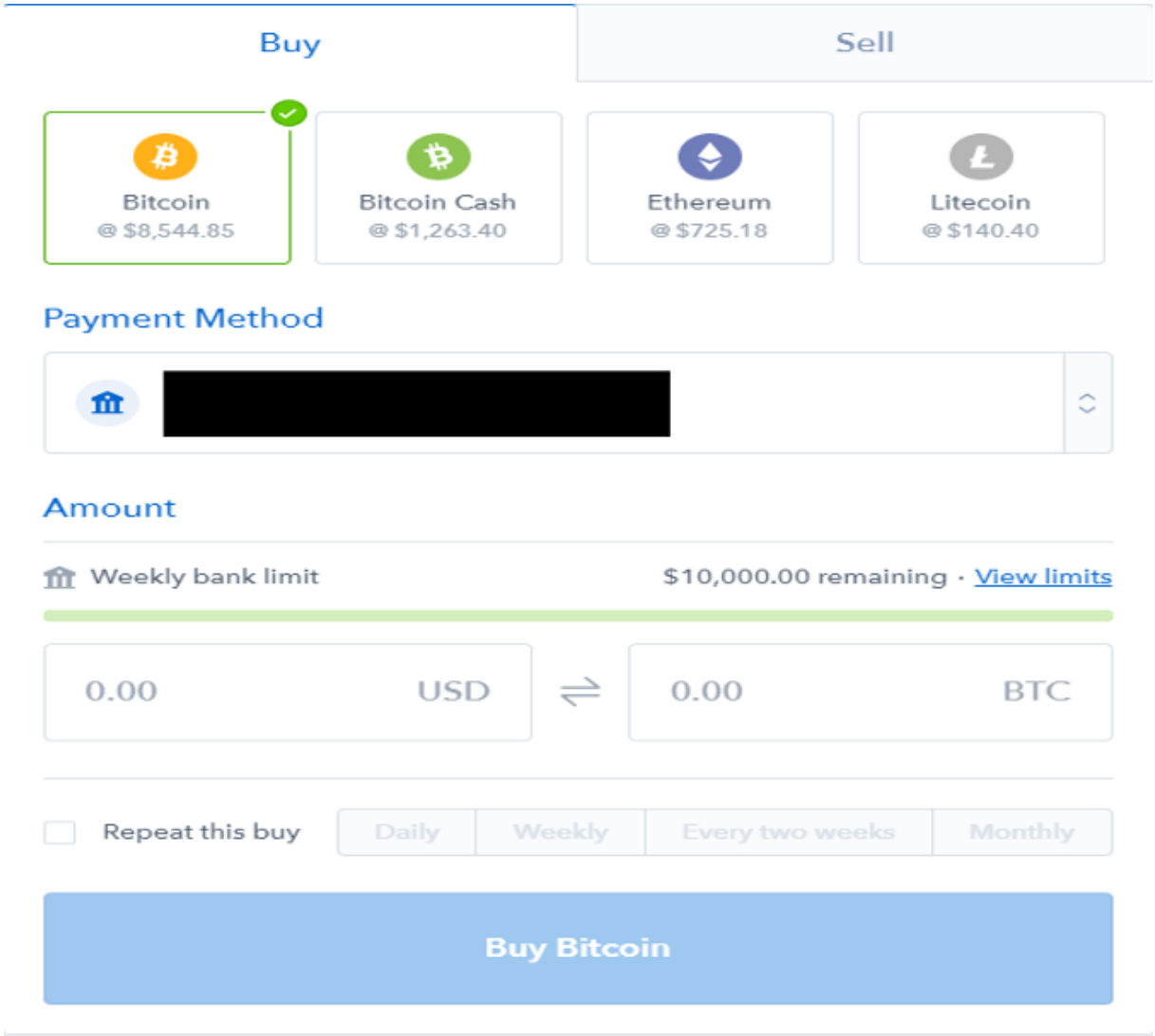
Part VII. Appendix

Annex 1: Adoption rate of cryptocurrencies and the internet



Appendix 2: Evolution of the platforms





Appendix 3: Exploratory Factor Analysis

- **Relative advantage**

First attempt:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
7. pourrait améliorer la façon dont je fais mes transactions	5,67	1,399	409
8. pourrait me donner un plus grand contrôle sur mes activités financières	6,00	1,341	409
9. pourrait me permettre d'accomplir mes transactions plus rapidement	5,70	1,462	409
10. améliore l'efficacité avec laquelle je réalise mes transactions	5,42	1,456	409
11. facilite mes achats	4,26	1,671	409

Matrice de corrélation

		7. pourrait améliorer la façon dont je fais mes transactions	8. pourrait me donner un plus grand contrôle sur mes activités financières	9. pourrait me permettre d'accomplir mes transactions plus rapidement	10. améliore l'efficacité avec laquelle je réalise mes transactions	11. facilite mes achats
Corrélation	7. pourrait améliorer la façon dont je fais mes transactions	1,000	,549	,551	,527	,429
	8. pourrait me donner un plus grand contrôle sur mes activités financières	,549	1,000	,422	,468	,300
	9. pourrait me permettre d'accomplir mes transactions plus rapidement	,551	,422	1,000	,698	,430
	10. améliore l'efficacité avec laquelle je réalise mes transactions	,527	,468	,698	1,000	,520
	11. facilite mes achats	,429	,300	,430	,520	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,796
Test de sphéricité de Bartlett	Khi-carré approx.	761,767
	ddl	10
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,976	59,517	59,517	2,976	59,517	59,517
2	,736	14,718	74,235			
3	,574	11,483	85,718			
4	,434	8,684	94,402			
5	,280	5,598	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
7. pourrait améliorer la façon dont je fais mes transactions	1,000	,635
8. pourrait me donner un plus grand contrôle sur mes activités financières	1,000	,490
9. pourrait me permettre d'accomplir mes transactions plus rapidement	1,000	,671
10. améliore l'efficacité avec laquelle je réalise mes transactions	1,000	,717
11. facilite mes achats	1,000	,463

Méthode d'extraction : Analyse en composantes principales.

Second attempt: suppression of RA5:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
7. pourrait améliorer la façon dont je fais mes transactions	5,67	1,399	409
8. pourrait me donner un plus grand contrôle sur mes activités financières	6,00	1,341	409
9. pourrait me permettre d'accomplir mes transactions plus rapidement	5,70	1,462	409
10. améliore l'efficacité avec laquelle je réalise mes transactions	5,42	1,456	409

Matrice de corrélation

		7. pourrait améliorer la façon dont je fais mes transactions	8. pourrait me donner un plus grand contrôle sur mes activités financières	9. pourrait me permettre d'accomplir mes transactions plus rapidement	10. améliore l'efficacité avec laquelle je réalise mes transactions
Corrélation	7. pourrait améliorer la façon dont je fais mes transactions	1,000	,549	,551	,527
	8. pourrait me donner un plus grand contrôle sur mes activités financières	,549	1,000	,422	,468
	9. pourrait me permettre d'accomplir mes transactions plus rapidement	,551	,422	1,000	,698
	10. améliore l'efficacité avec laquelle je réalise mes transactions	,527	,468	,698	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,752
Test de sphéricité de Bartlett	Khi-carré approx.	614,339
	ddl	6
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,613	65,313	65,313	2,613	65,313	65,313
2	,658	16,440	81,753			
3	,436	10,905	92,658			
4	,294	7,342	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
7. pourrait améliorer la façon dont je fais mes transactions	1,000	,660
8. pourrait me donner un plus grand contrôle sur mes activités financières	1,000	,546
9. pourrait me permettre d'accomplir mes transactions plus rapidement	1,000	,698
10. améliore l'efficacité avec laquelle je réalise mes transactions	1,000	,708

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
10. améliore l'efficacité avec laquelle je réalise mes transactions	,842
9. pourrait me permettre d'accomplir mes transactions plus rapidement	,835
7. pourrait améliorer la façon dont je fais mes transactions	,812
8. pourrait me donner un plus grand contrôle sur mes activités financières	,739

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

- **Financial risk**

First attempt:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	3,78	1,716	409
13. l'incapacité de convertir des bitcoins en devises conventionnelles (€, $,...) à un prix raisonnable	3,27	1,837	409
14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	3,34	1,588	409
15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)	4,60	1,664	409

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,724
Test de sphéricité de Bartlett	Khi-carré approx.	276,481
	ddl	6
	Signification	<,001

Qualités de représentation

	Initiales	Extraction
12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	1,000	,524
13. l'incapacité de convertir des bitcoins en devises conventionnelles (€, $,...) à un prix raisonnable	1,000	,474
14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	1,000	,592
15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)	1,000	,528

Méthode d'extraction : Analyse en composantes principales.

Matrice de corrélation

		12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	13. l'incapacité de convertir des bitcoins en devises conventionnelles (€, $,...) à un prix raisonnable	14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)
Corrélation	12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	1,000	,277	,412	,415
	13. l'incapacité de convertir des bitcoins en devises conventionnelles (€, $,...) à un prix raisonnable	,277	1,000	,426	,332
	14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	,412	,426	1,000	,369
	15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)	,415	,332	,369	1,000

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,117	52,929	52,929	2,117	52,929	52,929
2	,750	18,740	71,669			
3	,614	15,347	87,016			
4	,519	12,984	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	,769
15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)	,727
12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	,724
13. l'incapacité de convertir des bitcoins en devises conventionnelles (€, $,...) à un prix raisonnable	,688

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

Second attempt: suppression of FR2

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	3,78	1,716	409
14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	3,34	1,588	409
15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)	4,60	1,664	409

Matrice de corrélation

		12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)
Corrélation	12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	1,000	,412	,415
	14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	,412	1,000	,369
	15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)	,415	,369	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,659
Test de sphéricité de Bartlett	Khi-carré approx.	175,909
	ddl	3
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,797	59,904	59,904	1,797	59,904	59,904
2	,631	21,035	80,939			
3	,572	19,061	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	,792
15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)	,766
14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	,764

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

Qualités de représentation

	Initiales	Extraction
12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	1,000	,628
14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	1,000	,583
15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)	1,000	,586

Méthode d'extraction : Analyse en composantes principales.

- **Legal risk**

First attempt:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
16. les incertitudes légales pour les détenteurs de cryptomonnaies	5,00	1,670	409
17. une éventuelle intervention gouvernementale restreignant l'utilisation des cryptomonnaies	5,20	1,764	409

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-carré approx.	157,458
	ddl	1
	Signification	<,001

Qualités de représentation

	Initiales	Extraction
16. les incertitudes légales pour les détenteurs de cryptomonnaies	1,000	,783
17. une éventuelle intervention gouvernementale restreignant l'utilisation des cryptomonnaies	1,000	,783

Méthode d'extraction : Analyse en composantes principales.

Matrice de corrélation

		16. les incertitudes légales pour les détenteurs de cryptomonnaies	17. une éventuelle intervention gouvernementale restreignant l'utilisation des cryptomonnaies
Corrélation	16. les incertitudes légales pour les détenteurs de cryptomonnaies	1,000	,567
	17. une éventuelle intervention gouvernementale restreignant l'utilisation des cryptomonnaies	,567	1,000

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,567	78,335	78,335	1,567	78,335	78,335
2	,433	21,665	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
17. une éventuelle intervention gouvernementale restreignant l'utilisation des cryptomonnaies	,885
16. les incertitudes légales pour les détenteurs de cryptomonnaies	,885

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

- **Operational risk**

First attempt:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
18. les pertes dues aux modifications ou aux vulnérabilités du protocole Bitcoin	2,63	1,511	409
19. le manque de mécanismes intégrés pour annuler les transactions validées	3,48	1,830	409

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-carré approx.	39,672
	ddl	1
	Signification	<,001

Matrice de corrélation

		18. les pertes dues aux modifications ou aux vulnérabilités du protocole Bitcoin	19. le manque de mécanismes intégrés pour annuler les transactions validées
Corrélation	18. les pertes dues aux modifications ou aux vulnérabilités du protocole Bitcoin	1,000	,305
	19. le manque de mécanismes intégrés pour annuler les transactions validées	,305	1,000

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,305	65,247	65,247	1,305	65,247	65,247
2	,695	34,753	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
19. le manque de mécanismes intégrés pour annuler les transactions validées	,808
18. les pertes dues aux modifications ou aux vulnérabilités du protocole Bitcoin	,808

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

Qualités de représentation

	Initiales	Extraction
18. les pertes dues aux modifications ou aux vulnérabilités du protocole Bitcoin	1,000	,652
19. le manque de mécanismes intégrés pour annuler les transactions validées	1,000	,652

Méthode d'extraction : Analyse en composantes principales.

- **Adoption risk**

First attempt:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
20. le manque d'adoption des cryptomonnaies par les commerces à long terme	3,23	1,788	409
21. le manque d'interopérabilité avec d'autres services	3,32	1,692	409

Matrice de corrélation

		20. le manque d'adoption des cryptomonnaies par les commerces à long terme	21. le manque d'interopérabilité avec d'autres services
Corrélation	20. le manque d'adoption des cryptomonnaies par les commerces à long terme	1,000	,650
	21. le manque d'interopérabilité avec d'autres services	,650	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-carré approx.	223,621
	ddl	1
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,650	82,524	82,524	1,650	82,524	82,524
2	,350	17,476	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
20. le manque d'adoption des cryptomonnaies par les commerces à long terme	1,000	,825
21. le manque d'interopérabilité avec d'autres services	1,000	,825

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
21. le manque d'interopérabilité avec d'autres services	,908
20. le manque d'adoption des cryptomonnaies par les commerces à long terme	,908

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

- **Complexity**

First attempt

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
22. les cryptomonnaies sont complexes à utiliser	3,71	1,659	409
23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	4,80	1,535	409
24. la procédure à suivre pour payer avec des cryptomonnaies est claire et compréhensible	4,39	1,562	409
25. je sais quoi faire pour obtenir de l'aide si j'ai des difficultés à utiliser les cryptomonnaies	4,57	1,837	409

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,670
Test de sphéricité de Bartlett	Khi-carré approx.	342,303
	ddl	6
	Signification	<,001

Qualités de représentation

	Initiales	Extraction
22. les cryptomonnaies sont complexes à utiliser	1,000	,614
23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	1,000	,593
24. la procédure à suivre pour payer avec des cryptomonnaies est claire et compréhensible	1,000	,552
25. je sais quoi faire pour obtenir de l'aide si j'ai des difficultés à utiliser les cryptomonnaies	1,000	,395

Méthode d'extraction : Analyse en composantes principales.

Matrice de corrélation

		22. les cryptomonnaies sont complexes à utiliser	23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	24. la procédure à suivre pour payer avec des cryptomonnaies est claire et compréhensible	25. je sais quoi faire pour obtenir de l'aide si j'ai des difficultés à utiliser les cryptomonnaies
Corrélation	22. les cryptomonnaies sont complexes à utiliser	1,000	,582	-,405	-,249
	23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	,582	1,000	-,351	-,274
	24. la procédure à suivre pour payer avec des cryptomonnaies est claire et compréhensible	-,405	-,351	1,000	,431
	25. je sais quoi faire pour obtenir de l'aide si j'ai des difficultés à utiliser les cryptomonnaies	-,249	-,274	,431	1,000

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,155	53,865	53,865	2,155	53,865	53,865
2	,882	22,046	75,912			
3	,557	13,928	89,839			
4	,406	10,161	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
22. les cryptomonnaies sont complexes à utiliser	,784
23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	,770
24. la procédure à suivre pour payer avec des cryptomonnaies est claire et compréhensible	-,743
25. je sais quoi faire pour obtenir de l'aide si j'ai des difficultés à utiliser les cryptomonnaies	-,629

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

Second attempt: suppression of CO4

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
22. les cryptomonnaies sont complexes à utiliser	3,71	1,659	409
23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	4,80	1,535	409
24. la procédure à suivre pour payer avec des cryptomonnaies est claire et compréhensible	4,39	1,562	409

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,636
Test de sphéricité de Bartlett	Khi-carré approx.	250,278
	ddl	3
	Signification	<,001

Qualités de représentation

	Initiales	Extraction
22. les cryptomonnaies sont complexes à utiliser	1,000	,723
23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	1,000	,680
24. la procédure à suivre pour payer avec des cryptomonnaies est claire et compréhensible	1,000	,496

Méthode d'extraction : Analyse en composantes principales.

Matrice de corrélation

		22. les cryptomonnaies sont complexes à utiliser	23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	24. la procédure à suivre pour payer avec des cryptomonnaies est claire et compréhensible
Corrélation	22. les cryptomonnaies sont complexes à utiliser	1,000	,582	-,405
	23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	,582	1,000	-,351
	24. la procédure à suivre pour payer avec des cryptomonnaies est claire et compréhensible	-,405	-,351	1,000

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,899	63,310	63,310	1,899	63,310	63,310
2	,687	22,888	86,198			
3	,414	13,802	100,000			

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
22. les cryptomonnaies sont complexes à utiliser	,850
23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	,825
24. la procédure à suivre pour payer avec des cryptomonnaies est claire et compréhensible	-,704

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

Third attempt: suppression of C03

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
22. les cryptomonnaies sont complexes à utiliser	3,71	1,659	409
23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	4,80	1,535	409

Matrice de corrélation

		22. les cryptomonnaies sont complexes à utiliser	23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts
Corrélation	22. les cryptomonnaies sont complexes à utiliser	1,000	,582
	23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	,582	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-carré approx.	167,912
	ddl	1
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,582	79,085	79,085	1,582	79,085	79,085
2	,418	20,915	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
22. les cryptomonnaies sont complexes à utiliser	1,000	,791
23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	1,000	,791

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante
	1
22. les cryptomonnaies sont complexes à utiliser	,889
23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	,889

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

- **Compatibility**

First attempt:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
26. Les cryptomonnaies correspondent à mes besoins	5,27	1,372	409
27. Les cryptomonnaies correspondent à mon style de vie	5,35	1,427	409
28. Utiliser des cryptomonnaies changerait mes habitudes	4,76	1,691	409
29. Les cryptomonnaies sont un bon complément aux devises traditionnelles (€, $,...)	5,94	1,389	409

Matrice de corrélation

		26. Les cryptomonnaies correspondent à mes besoins	27. Les cryptomonnaies correspondent à mon style de vie	28. Utiliser des cryptomonnaies changerait mes habitudes	29. Les cryptomonnaies sont un bon complément aux devises traditionnelles (€, $,...)
Corrélation	26. Les cryptomonnaies correspondent à mes besoins	1,000	,731	,235	,400
	27. Les cryptomonnaies correspondent à mon style de vie	,731	1,000	,276	,351
	28. Utiliser des cryptomonnaies changerait mes habitudes	,235	,276	1,000	,160
	29. Les cryptomonnaies sont un bon complément aux devises traditionnelles (€, $,...)	,400	,351	,160	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,644
Test de sphéricité de Bartlett	Khi-carré approx.	418,806
	ddl	6
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,146	53,641	53,641	2,146	53,641	53,641
2	,871	21,773	75,414			
3	,718	17,946	93,359			
4	,266	6,641	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
26. Les cryptomonnaies correspondent à mes besoins	1,000	,762
27. Les cryptomonnaies correspondent à mon style de vie	1,000	,751
28. Utiliser des cryptomonnaies changerait mes habitudes	1,000	,227
29. Les cryptomonnaies sont un bon complément aux devises traditionnelles (€, $,...)	1,000	,406

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
26. Les cryptomonnaies correspondent à mes besoins	,873
27. Les cryptomonnaies correspondent à mon style de vie	,867
29. Les cryptomonnaies sont un bon complément aux devises traditionnelles (€, $,...)	,637
28. Utiliser des cryptomonnaies changerait mes habitudes	,477

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

Second attempt: suppression of COMP3 and COMP4

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
26. Les cryptomonnaies correspondent à mes besoins	5,27	1,372	409
27. Les cryptomonnaies correspondent à mon style de vie	5,35	1,427	409

Matrice de corrélation

		26. Les cryptomonnaies correspondent à mes besoins	27. Les cryptomonnaies correspondent à mon style de vie
Corrélation	26. Les cryptomonnaies correspondent à mes besoins	1,000	,731
	27. Les cryptomonnaies correspondent à mon style de vie	,731	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-carré approx.	310,349
	ddl	1
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,731	86,536	86,536	1,731	86,536	86,536
2	,269	13,464	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
26. Les cryptomonnaies correspondent à mes besoins	1,000	,865
27. Les cryptomonnaies correspondent à mon style de vie	1,000	,865

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
27. Les cryptomonnaies correspondent à mon style de vie	,930
26. Les cryptomonnaies correspondent à mes besoins	,930

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

- **Attitude**

First attempt:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
30. Je préfère utiliser des devises traditionnelles (€, $, ...)	3,99	1,666	409
31. Je n'aime pas l'idée d'avoir un système décentralisé (sans intermédiaire ; banque,...) concernant mon argent	1,85	1,405	409
32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter	2,62	1,567	409

Matrice de corrélation

		30. Je préfère utiliser des devises traditionnelles (€, $, ...)	31. Je n'aime pas l'idée d'avoir un système décentralisé (sans intermédiaire ; banque,...) concernant mon argent	32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter
Corrélation	30. Je préfère utiliser des devises traditionnelles (€, $, ...)	1,000	,277	,427
	31. Je n'aime pas l'idée d'avoir un système décentralisé (sans intermédiaire ; banque,...) concernant mon argent	,277	1,000	,328
	32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter	,427	,328	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,624
Test de sphéricité de Bartlett	Khi-carré approx.	138,489
	ddl	3
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,692	56,389	56,389	1,692	56,389	56,389
2	,741	24,710	81,099			
3	,567	18,901	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
30. Je préfère utiliser des devises traditionnelles (€, $, ...)	1,000	,587
31. Je n'aime pas l'idée d'avoir un système décentralisé (sans intermédiaire ; banque,...) concernant mon argent	1,000	,469
32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter	1,000	,636

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter	,798
30. Je préfère utiliser des devises traditionnelles (€, $, ...)	,766
31. Je n'aime pas l'idée d'avoir un système décentralisé (sans intermédiaire ; banque,...) concernant mon argent	,685

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

Second attempt: suppression of ATT2

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
30. Je préfère utiliser des devises traditionnelles (€, $, ...)	3,99	1,666	409
32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter	2,62	1,567	409

Matrice de corrélation

		30. Je préfère utiliser des devises traditionnelles (€, $, ...)	32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter
Corrélation	30. Je préfère utiliser des devises traditionnelles (€, $, ...)	1,000	,427
	32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter	,427	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-carré approx.	81,796
	ddl	1
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,427	71,346	71,346	1,427	71,346	71,346
2	,573	28,654	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
30. Je préfère utiliser des devises traditionnelles (€, $, ...)	1,000	,713
32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter	1,000	,713

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante
	1
32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter	,845
30. Je préfère utiliser des devises traditionnelles (€, $, ...)	,845

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

♦ Motivation

First attempt:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
33. Utiliser des cryptomonnaies est divertissant et passionnant	6,00	1,227	409
34. Utiliser des cryptomonnaies serait plus bénéfique pour moi	5,60	1,297	409
35. J'ai besoin des cryptomonnaies pour leurs fonctions / caractéristiques	4,96	1,575	409
36. J'ai l'intention d'utiliser des cryptomonnaies dans un proche avenir	5,75	1,485	409

Matrice de corrélation

		33. Utiliser des cryptomonnaies est divertissant et passionnant	34. Utiliser des cryptomonnaies serait plus bénéfique pour moi	35. J'ai besoin des cryptomonnaies pour leurs fonctions / caractéristiques	36. J'ai l'intention d'utiliser des cryptomonnaies dans un proche avenir
Corrélation	33. Utiliser des cryptomonnaies est divertissant et passionnant	1,000	,575	,328	,461
	34. Utiliser des cryptomonnaies serait plus bénéfique pour moi	,575	1,000	,575	,564
	35. J'ai besoin des cryptomonnaies pour leurs fonctions / caractéristiques	,328	,575	1,000	,509
	36. J'ai l'intention d'utiliser des cryptomonnaies dans un proche avenir	,461	,564	,509	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,749
Test de sphéricité de Bartlett	Khi-carré approx.	531,293
	ddl	6
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,515	62,864	62,864	2,515	62,864	62,864
2	,676	16,895	79,759			
3	,475	11,881	91,640			
4	,334	8,360	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
33. Utiliser des cryptomonnaies est divertissant et passionnant	1,000	,544
34. Utiliser des cryptomonnaies serait plus bénéfique pour moi	1,000	,751
35. J'ai besoin des cryptomonnaies pour leurs fonctions / caractéristiques	1,000	,576
36. J'ai l'intention d'utiliser des cryptomonnaies dans un proche avenir	1,000	,643

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
34. Utiliser des cryptomonnaies serait plus bénéfique pour moi	,867
36. J'ai l'intention d'utiliser des cryptomonnaies dans un proche avenir	,802
35. J'ai besoin des cryptomonnaies pour leurs fonctions / caractéristiques	,759
33. Utiliser des cryptomonnaies est divertissant et passionnant	,738

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

- **Self-efficacy**

First attempt

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
37. Je sais comment utiliser les cryptomonnaies	5,70	1,342	409
38. Je me sentirais à l'aise d'utiliser le paiement en cryptomonnaies	5,70	1,438	409
39. Je suis sûr de comprendre et de savoir utiliser le paiement en cryptomonnaies	5,54	1,508	409
40. Si je le souhaitais, je pourrais facilement payer en cryptomonnaies même si je ne l'ai jamais fait auparavant	5,44	1,580	409

Matrice de corrélation

		37. Je sais comment utiliser les cryptomonnaies	38. Je me sentirais à l'aise d'utiliser le paiement en cryptomonnaies	39. Je suis sûr de comprendre et de savoir utiliser le paiement en cryptomonnaies	40. Si je le souhaitais, je pourrais facilement payer en cryptomonnaies même si je ne l'ai jamais fait auparavant
Corrélation	37. Je sais comment utiliser les cryptomonnaies	1,000	,710	,825	,500
	38. Je me sentirais à l'aise d'utiliser le paiement en cryptomonnaies	,710	1,000	,718	,525
	39. Je suis sûr de comprendre et de savoir utiliser le paiement en cryptomonnaies	,825	,718	1,000	,597
	40. Si je le souhaitais, je pourrais facilement payer en cryptomonnaies même si je ne l'ai jamais fait auparavant	,500	,525	,597	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,793
Test de sphéricité de Bartlett	Khi-carré approx.	987,432
	ddl	6
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,953	73,830	73,830	2,953	73,830	73,830
2	,560	14,002	87,832			
3	,322	8,046	95,879			
4	,165	4,121	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
37. Je sais comment utiliser les cryptomonnaies	1,000	,801
38. Je me sentirais à l'aise d'utiliser le paiement en cryptomonnaies	1,000	,747
39. Je suis sûr de comprendre et de savoir utiliser le paiement en cryptomonnaies	1,000	,852
40. Si je le souhaitais, je pourrais facilement payer en cryptomonnaies même si je ne l'ai jamais fait auparavant	1,000	,553

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
39. Je suis sûr de comprendre et de savoir utiliser le paiement en cryptomonnaies	,923
37. Je sais comment utiliser les cryptomonnaies	,895
38. Je me sentirais à l'aise d'utiliser le paiement en cryptomonnaies	,864
40. Si je le souhaitais, je pourrais facilement payer en cryptomonnaies même si je ne l'ai jamais fait auparavant	,744

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

- **Market controlled propagation mechanisms**

First attempt

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
41. Les médias me donnent une bonne impression des cryptomonnaies	2,49	1,455	409
42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	3,41	1,574	409
43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai	3,55	1,588	409
44. J'ai lu / vu que l'utilisation des cryptomonnaies est une bonne alternative à la monnaie traditionnelle (€, $, ...)	4,72	1,771	409

Matrice de corrélation

		41. Les médias me donnent une bonne impression des cryptomonnaies	42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai	44. J'ai lu / vu que l'utilisation des cryptomonnaies est une bonne alternative à la monnaie traditionnelle (€, $, ...)
Corrélation	41. Les médias me donnent une bonne impression des cryptomonnaies	1,000	,329	,260	,188
	42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	,329	1,000	,824	,189
	43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai	,260	,824	1,000	,182
	44. J'ai lu / vu que l'utilisation des cryptomonnaies est une bonne alternative à la monnaie traditionnelle (€, $, ...)	,188	,189	,182	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,573
Test de sphéricité de Bartlett	Khi-carré approx.	531,139
	ddl	6
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,089	52,231	52,231	2,089	52,231	52,231
2	,949	23,736	75,968			
3	,789	19,715	95,682			
4	,173	4,318	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
41. Les médias me donnent une bonne impression des cryptomonnaies	1,000	,310
42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	1,000	,828
43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai	1,000	,790
44. J'ai lu / vu que l'utilisation des cryptomonnaies est une bonne alternative à la monnaie traditionnelle (€, $, ...)	1,000	,162

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	,910
43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai	,889
41. Les médias me donnent une bonne impression des cryptomonnaies	,557
44. J'ai lu / vu que l'utilisation des cryptomonnaies est une bonne alternative à la monnaie traditionnelle (€, $, ...)	,402

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

Second attempt: suppression of PM1 and PM4

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	3,41	1,574	409
43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai	3,55	1,588	409

Matrice de corrélation

		42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai
Corrélation	42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	1,000	,824
	43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai	,824	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-carré approx.	461,972
	ddl	1
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,824	91,202	91,202	1,824	91,202	91,202
2	,176	8,798	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	1,000	,912
43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai	1,000	,912

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	,955
43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai	,955

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

- **Resistance: postponement**

First attempt:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	3,01	1,715	409
46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies	3,29	1,719	409
47. J'attends le bon moment et d'avoir les capacités requises pour investir dans les cryptomonnaies	3,22	1,980	409

Matrice de corrélation

		45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies	47. J'attends le bon moment et d'avoir les capacités requises pour investir dans les cryptomonnaies
Corrélation	45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	1,000	,608	,335
	46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies	,608	1,000	,415
	47. J'attends le bon moment et d'avoir les capacités requises pour investir dans les cryptomonnaies	,335	,415	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,625
Test de sphéricité de Bartlett	Khi-carré approx.	269,404
	ddl	3
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,916	63,857	63,857	1,916	63,857	63,857
2	,700	23,342	87,200			
3	,384	12,800	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	1,000	,686
46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies	1,000	,747
47. J'attends le bon moment et d'avoir les capacités requises pour investir dans les cryptomonnaies	1,000	,483

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies	,864
45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	,828
47. J'attends le bon moment et d'avoir les capacités requises pour investir dans les cryptomonnaies	,695

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

Second attempt: suppression of POST3

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	3,01	1,715	409
46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies	3,29	1,719	409

Matrice de corrélation

		45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies
Corrélation	45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	1,000	,608
	46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies	,608	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-carré approx.	187,527
	ddl	1
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,608	80,395	80,395	1,608	80,395	80,395
2	,392	19,605	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	1,000	,804
46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies	1,000	,804

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies	,897
45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	,897

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

- **Resistance: Opposition**

First attempt:

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
48. J'ai peur de gaspiller mon argent en optant pour les cryptomonnaies	2,25	1,536	409
49. J'ai des plaintes / objections à l'encontre des cryptomonnaies	2,45	1,611	409

Matrice de corrélation

		48. J'ai peur de gaspiller mon argent en optant pour les cryptomonnaies	49. J'ai des plaintes / objections à l'encontre des cryptomonnaies
Corrélation	48. J'ai peur de gaspiller mon argent en optant pour les cryptomonnaies	1,000	,474
	49. J'ai des plaintes / objections à l'encontre des cryptomonnaies	,474	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-carré approx.	103,479
	ddl	1
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,474	73,704	73,704	1,474	73,704	73,704
2	,526	26,296	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
48. J'ai peur de gaspiller mon argent en optant pour les cryptomonnaies	1,000	,737
49. J'ai des plaintes / objections à l'encontre des cryptomonnaies	1,000	,737

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
49. J'ai des plaintes / objections à l'encontre des cryptomonnaies	,859
48. J'ai peur de gaspiller mon argent en optant pour les cryptomonnaies	,859

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

- **Resistance: Rejection**

Statistiques descriptives

	Moyenne	Ecart type	Analyse N
50. Je n'ai pas besoin des cryptomonnaies	2,11	1,507	409
51. Les cryptomonnaies ne sont pas faites pour moi	1,66	1,116	409

Matrice de corrélation

		50. Je n'ai pas besoin des cryptomonnaies	51. Les cryptomonnaies ne sont pas faites pour moi
Corrélation	50. Je n'ai pas besoin des cryptomonnaies	1,000	,648
	51. Les cryptomonnaies ne sont pas faites pour moi	,648	1,000

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,500
Test de sphéricité de Bartlett	Khi-carré approx.	221,256
	ddl	1
	Signification	<,001

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,648	82,394	82,394	1,648	82,394	82,394
2	,352	17,606	100,000			

Méthode d'extraction : Analyse en composantes principales.

Qualités de représentation

	Initiales	Extraction
50. Je n'ai pas besoin des cryptomonnaies	1,000	,824
51. Les cryptomonnaies ne sont pas faites pour moi	1,000	,824

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante 1
51. Les cryptomonnaies ne sont pas faites pour moi	,908
50. Je n'ai pas besoin des cryptomonnaies	,908

Méthode d'extraction : Analyse en composantes principales.

a. 1 composantes extraites.

Appendix 4: Reliability analysis

- **Relative advantage**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
7. pourrait améliorer la façon dont je fais mes transactions	17,11	12,513	,653	,438	,774
8. pourrait me donner un plus grand contrôle sur mes activités financières	16,78	13,592	,560	,346	,814
9. pourrait me permettre d'accomplir mes transactions plus rapidement	17,08	11,913	,682	,534	,760
10. améliore l'efficacité avec laquelle je réalise mes transactions	17,36	11,864	,693	,534	,755

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,823	,822	4

- **Financial risk**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
12. des failles en termes de sécurité, ou un dysfonctionnement soit du système lors des transactions, ou des fournisseurs de portefeuille	7,94	7,244	,499	,249	,539
14. les pertes dues au non-respect par les contreparties des paiements contractuels ou des obligations prévues	8,39	8,081	,464	,217	,586
15. les pertes dues à des incidents de sécurité (par exemple, mots de passe perdus, logiciels malveillants)	7,12	7,711	,467	,219	,582

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,665	,665	3

- **Legal risk**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
16. les incertitudes légales pour les détenteurs de cryptomonnaies	5,20	3,110	,567	,321	.
17. une éventuelle intervention gouvernementale restreignant l'utilisation des cryptomonnaies	5,00	2,789	,567	,321	.

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,723	,723	2

- **Operational risk**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
18. les pertes dues aux modifications ou aux vulnérabilités du protocole Bitcoin	3,48	3,348	,305	,093	.
19. le manque de mécanismes intégrés pour annuler les transactions validées	2,63	2,282	,305	,093	.

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,461	,467	2

- **Adoption risk**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
20. le manque d'adoption des cryptomonnaies par les commerces à long terme	3,32	2,864	,650	,423	.
21. le manque d'interopérabilité avec d'autres services	3,23	3,197	,650	,423	.

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,788	,788	2

- **Complexity**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
22. les cryptomonnaies sont complexes à utiliser	4,80	2,355	,582	,338	.
23. comprendre et utiliser les cryptomonnaies nécessite plus de compétences et d'efforts	3,71	2,752	,582	,338	.

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,734	,736	2

- **Effect on the adoption of other innovation**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
30. Je préfère utiliser des devises traditionnelles (€, $, ...)	2,62	2,457	,427	,182	.
32. Je suis assez satisfait et favorable au système financier actuel et à la manière dont j'utilise l'argent (€, $, ...) pour acheter	3,99	2,774	,427	,182	.

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,598	,598	2

- **Motivation**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
33. Utiliser des cryptomonnaies est divertissant et passionnant	16,31	13,268	,535	,361	,780
34. Utiliser des cryptomonnaies serait plus bénéfique pour moi	16,70	11,520	,721	,530	,694
35. J'ai besoin des cryptomonnaies pour leurs fonctions / caractéristiques	17,34	11,070	,572	,383	,770
36. J'ai l'intention d'utiliser des cryptomonnaies dans un proche avenir	16,56	11,115	,629	,397	,735

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,796	,801	4

- **Self-efficacy**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
37. Je sais comment utiliser les cryptomonnaies	16,68	15,183	,784	,710	,824
38. Je me sentirais à l'aise d'utiliser le paiement en cryptomonnaies	16,68	14,876	,743	,572	,837
39. Je suis sûr de comprendre et de savoir utiliser le paiement en cryptomonnaies	16,84	13,611	,836	,744	,799
40. Si je le souhaitais, je pourrais facilement payer en cryptomonnaies même si je ne l'ai jamais fait auparavant	16,94	15,332	,594	,377	,899

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,876	,879	4

- **Market controlled propagation mechanisms**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
42. Si les médias suggèrent que les cryptomonnaies sont biens, je les croirai	3,55	2,523	,824	,679	.
43. Si les médias suggèrent d'utiliser des cryptomonnaies, je les utiliserai	3,41	2,478	,824	,679	.

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,904	,904	2

- **Resistance: postponement**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
45. J'utiliserai les cryptomonnaies quand il sera prouvé qu'elles me seront bénéfiques	3,29	2,956	,608	,370	.
46. Je dois clarifier certaines questions et justifier les raisons d'opter pour les cryptomonnaies	3,01	2,941	,608	,370	.

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,756	,756	2

- **Resistance: opposition**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
48. J'ai peur de gaspiller mon argent en optant pour les cryptomonnaies	2,45	2,596	,474	,225	.
49. J'ai des plaintes / objections à l'encontre des cryptomonnaies	2,25	2,358	,474	,225	.

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,643	,643	2

- **Resistance: rejection**

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'élément	Variance de l'échelle en cas de suppression d'élément	Corrélation complète des éléments corrigés	Carré de la corrélation multiple	Alpha de Cronbach en cas de suppression d'élément
50. Je n'ai pas besoin des cryptomonnaies	1,66	1,245	,648	,420	.
51. Les cryptomonnaies ne sont pas faites pour moi	2,11	2,270	,648	,420	.

Statistiques de fiabilité

Alpha de Cronbach	Alpha de Cronbach basé sur des éléments standardisés	Nombre d'éléments
,765	,786	2

Appendix 5: multi-linear regression

Variables introduites/éliminées[a]

Modèle	Variables introduites	Variables éliminées	Méthode
1	Self_efficacy	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).
2	Motivation	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).
3	Adoption_Risk	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).
4	Financial_Risk	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).
5	Compatibility	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).
6	Propagation_mechanism	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).
7	Attitude	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).

a. Variable dépendante : Resistance

Note that *attitude here refers to "effect on adoption of other innovation"

Récapitulatif des modèles[h]

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation	Modifier les statistiques					Durbin-Watson
					Variation de R-deux	Variation de F	ddl1	ddl2	Sig. Variation de F	
1	,587[a]	,344	,343	,82285	,344	213,586	1	407	<,001	
2	,642[b]	,412	,409	,78001	,068	46,932	1	406	<,001	
3	,667[c]	,446	,441	,75844	,033	24,419	1	405	<,001	
4	,684[d]	,468	,462	,74412	,022	16,743	1	404	<,001	
5	,692[e]	,479	,473	,73681	,012	9,050	1	403	,003	
6	,697[f]	,485	,478	,73340	,006	4,761	1	402	,030	
7	,700[g]	,490	,481	,73077	,005	3,893	1	401	,049	1,923

a. Prédicteurs : (Constante), Self_efficacy

b. Prédicteurs : (Constante), Self_efficacy, Motivation

c. Prédicteurs : (Constante), Self_efficacy, Motivation, Adoption_Risk

d. Prédicteurs : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk

e. Prédicteurs : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk, Compatibility

f. Prédicteurs : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk, Compatibility, Propagation_mechanism

g. Prédicteurs : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk, Compatibility, Propagation_mechanism, Attitude

h. Variable dépendante : Resistance

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	144,615	1	144,615	213,586	<,001[b]
	de Student	275,572	407	,677		
	Total	420,187	408			
2	Régression	173,169	2	86,585	142,311	<,001[c]
	de Student	247,018	406	,608		
	Total	420,187	408			
3	Régression	187,216	3	62,405	108,486	<,001[d]
	de Student	232,971	405	,575		
	Total	420,187	408			
4	Régression	196,487	4	49,122	88,714	<,001[e]
	de Student	223,700	404	,554		
	Total	420,187	408			
5	Régression	201,400	5	40,280	74,195	<,001[f]
	de Student	218,786	403	,543		
	Total	420,187	408			
6	Régression	203,961	6	33,994	63,200	<,001[g]
	de Student	216,225	402	,538		
	Total	420,187	408			
7	Régression	206,040	7	29,434	55,117	<,001[h]
	de Student	214,147	401	,534		
	Total	420,187	408			

a. Variable dépendante : Resistance

b. Prédicteurs : (Constante), Self_efficacy

c. Prédicteurs : (Constante), Self_efficacy, Motivation

d. Prédicteurs : (Constante), Self_efficacy, Motivation, Adoption_Risk

e. Prédicteurs : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk

f. Prédicteurs : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk, Compatibility

g. Prédicteurs : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk, Compatibility, Propagation_mechanism

h. Prédicteurs : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk, Compatibility, Propagation_mechanism, Attitude

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés			Intervalle de confiance à 95,0% pour B		Corrélations			Statistiques de colinéarité	
		B	Erreur standard	Bêta	t	Sig.	Borne inférieure	Borne supérieure	Corrélation simple	Partielle	Partielle	Tolérance	VIF
1	(Constante)	5,156	,186		27,696	<,001	4,790	5,522					
	Self_efficacy	-,475	,032	-,587	-14,615	<,001	-,538	-,411	-,587	-,587	-,587	1,000	1,000
2	(Constante)	5,936	,210		28,264	<,001	5,524	6,349					
	Self_efficacy	-,315	,039	-,389	-8,147	<,001	-,391	-,239	-,587	-,375	-,310	,635	1,575
	Motivation	-,300	,044	-,327	-6,851	<,001	-,387	-,214	-,562	-,322	-,261	,635	1,575
3	(Constante)	5,108	,264		19,337	<,001	4,589	5,628					
	Self_efficacy	-,275	,038	-,340	-7,166	<,001	-,351	-,200	-,587	-,335	-,265	,607	1,646
	Motivation	-,266	,043	-,290	-6,166	<,001	-,351	-,181	-,562	-,293	-,228	,619	1,616
	Adoption_Risk	,127	,026	,198	4,942	<,001	,077	,178	,418	,238	,183	,849	1,178
4	(Constante)	4,369	,316		13,826	<,001	3,748	4,990					
	Self_efficacy	-,247	,038	-,305	-6,433	<,001	-,322	-,171	-,587	-,305	-,234	,587	1,703
	Motivation	-,243	,043	-,264	-5,674	<,001	-,327	-,159	-,562	-,272	-,206	,608	1,646
	Adoption_Risk	,108	,026	,168	4,193	<,001	,057	,159	,418	,204	,152	,820	1,220
	Financial_Risk	,131	,032	,165	4,092	<,001	,068	,194	,424	,199	,149	,808	1,237
5	(Constante)	4,576	,320		14,283	<,001	3,946	5,205					
	Self_efficacy	-,232	,038	-,287	-6,060	<,001	-,307	-,157	-,587	-,289	-,218	,578	1,731
	Motivation	-,168	,049	-,184	-3,440	<,001	-,265	-,072	-,562	-,169	-,124	,454	2,203
	Adoption_Risk	,109	,025	,170	4,279	<,001	,059	,159	,418	,208	,154	,820	1,220
	Financial_Risk	,110	,032	,139	3,385	<,001	,046	,173	,424	,166	,122	,770	1,298
	Compatibility	-,117	,039	-,151	-3,008	,003	-,194	-,041	-,519	-,148	-,108	,515	1,943
6	(Constante)	4,435	,325		13,631	<,001	3,795	5,074					
	Self_efficacy	-,232	,038	-,286	-6,082	<,001	-,306	-,157	-,587	-,290	-,218	,578	1,731
	Motivation	-,175	,049	-,190	-3,580	<,001	-,271	-,079	-,562	-,176	-,128	,452	2,211
	Adoption_Risk	,109	,025	,170	4,306	<,001	,059	,159	,418	,210	,154	,820	1,220
	Financial_Risk	,109	,032	,138	3,389	<,001	,046	,173	,424	,167	,121	,770	1,298
	Compatibility	-,119	,039	-,153	-3,059	,002	-,195	-,042	-,519	-,151	-,109	,514	1,944
	Propagation_mechanism	,053	,024	,078	2,182	,030	,005	,100	,020	,108	,078	,990	1,010
7	(Constante)	4,053	,377		10,740	<,001	3,312	4,795					
	Self_efficacy	-,223	,038	-,275	-5,833	<,001	-,298	-,148	-,587	-,280	-,208	,570	1,755
	Motivation	-,160	,049	-,175	-3,260	,001	-,257	-,064	-,562	-,161	-,116	,442	2,261
	Adoption_Risk	,100	,026	,156	3,909	<,001	,050	,151	,418	,192	,139	,794	1,259
	Financial_Risk	,103	,032	,131	3,205	,001	,040	,167	,424	,158	,114	,764	1,309
	Compatibility	-,100	,040	-,129	-2,515	,012	-,179	-,022	-,519	-,125	-,090	,486	2,060
	Propagation_mechanism	,049	,024	,073	2,035	,042	,002	,097	,020	,101	,073	,984	1,016
	Attitude	,066	,033	,089	1,973	,049	,000	,131	,469	,098	,070	,630	1,587

a. Variable dépendante : Resistance

Variables exclues[a]

Modèle		Bêta In	t	Sig.	Corrélation partielle	Statistiques de colinéarité		
						Tolérance	VIF	Tolérance minimum
1	Relative_Advantage	-,255[b]	-5,652	<,001	-,270	,736	1,358	,736
	Financial_Risk	,237[b]	5,687	<,001	,272	,860	1,163	,860
	Legal_Risk	,093[b]	2,335	,020	,115	,995	1,005	,995
	Adoption_Risk	,238[b]	5,747	<,001	,274	,871	1,148	,871
	Complexity	,049[b]	1,147	,252	,057	,883	1,132	,883
	Compatibility	-,299[b]	-6,766	<,001	-,318	,744	1,344	,744
	Attitude	,257[b]	5,967	<,001	,284	,798	1,253	,798
	Motivation	-,327[b]	-6,851	<,001	-,322	,635	1,575	,635
	Propagation_mechanism	,055[b]	1,367	,172	,068	,996	1,004	,996
2	Relative_Advantage	-,139[c]	-2,758	,006	-,136	,559	1,789	,482
	Financial_Risk	,197[c]	4,854	<,001	,234	,837	1,195	,604
	Legal_Risk	,089[c]	2,338	,020	,115	,995	1,006	,634
	Adoption_Risk	,198[c]	4,942	<,001	,238	,849	1,178	,607
	Complexity	,059[c]	1,459	,145	,072	,882	1,133	,579
	Compatibility	-,194[c]	-3,802	<,001	-,186	,540	1,851	,461
	Attitude	,181[c]	4,087	<,001	,199	,711	1,406	,566
	Propagation_mechanism	,076[c]	2,007	,045	,099	,990	1,010	,631
3	Relative_Advantage	-,116[d]	-2,356	,019	-,116	,554	1,807	,478
	Financial_Risk	,165[d]	4,092	<,001	,199	,808	1,237	,587
	Legal_Risk	,054[d]	1,421	,156	,071	,954	1,049	,607
	Complexity	,051[d]	1,306	,192	,065	,881	1,135	,558
	Compatibility	-,187[d]	-3,781	<,001	-,185	,540	1,853	,454
	Attitude	,144[d]	3,269	,001	,161	,685	1,460	,561
	Propagation_mechanism	,077[d]	2,076	,038	,103	,990	1,010	,607
4	Relative_Advantage	-,111[e]	-2,276	,023	-,113	,553	1,808	,472
	Legal_Risk	,017[e]	,432	,666	,021	,893	1,119	,586
	Complexity	,018[e]	,445	,657	,022	,839	1,192	,551
	Compatibility	-,151[e]	-3,008	,003	-,148	,515	1,943	,454
	Attitude	,121[e]	2,758	,006	,136	,671	1,491	,557
	Propagation_mechanism	,077[e]	2,109	,036	,104	,990	1,010	,587
5	Relative_Advantage	-,081[f]	-1,640	,102	-,082	,524	1,910	,403
	Legal_Risk	,004[f]	,092	,927	,005	,882	1,134	,449
	Complexity	,012[f]	,294	,769	,015	,836	1,195	,450
	Attitude	,095[f]	2,124	,034	,105	,634	1,578	,444
	Propagation_mechanism	,078[f]	2,182	,030	,108	,990	1,010	,452
6	Relative_Advantage	-,086[g]	-1,750	,081	-,087	,522	1,914	,402
	Legal_Risk	,002[g]	,044	,965	,002	,881	1,135	,448
	Complexity	,012[g]	,296	,767	,015	,836	1,195	,449
	Attitude	,089[g]	1,973	,049	,098	,630	1,587	,442
7	Relative_Advantage	-,069[h]	-1,361	,174	-,068	,498	2,007	,400
	Legal_Risk	-,005[h]	-,132	,895	-,007	,874	1,144	,437
	Complexity	,012[h]	,307	,759	,015	,836	1,196	,439

a. Variable dépendante : Resistance

b. Prédicteurs dans le modèle : (Constante), Self_efficacy

c. Prédicteurs dans le modèle : (Constante), Self_efficacy, Motivation

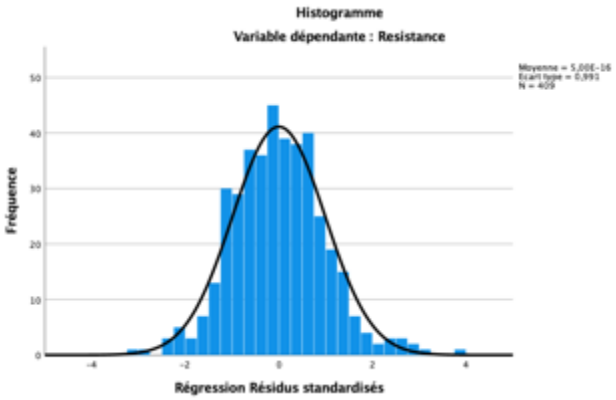
d. Prédicteurs dans le modèle : (Constante), Self_efficacy, Motivation, Adoption_Risk

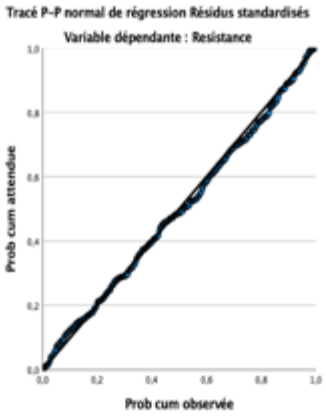
e. Prédicteurs dans le modèle : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk

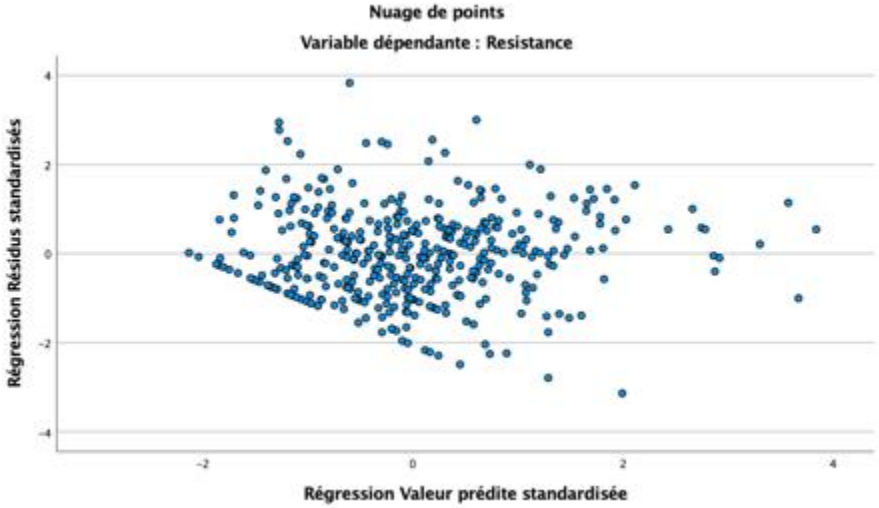
f. Prédicteurs dans le modèle : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk, Compatibility

g. Prédicteurs dans le modèle : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk, Compatibility, Propagation_mechanism

h. Prédicteurs dans le modèle : (Constante), Self_efficacy, Motivation, Adoption_Risk, Financial_Risk, Compatibility, Propagation_mechanism, Attitude







Appendix 6: ANOVA test for the education

Descriptives

Resistance

	N	Moyenne	Ecart type	Erreur standard	Intervalle de confiance à 95 % pour la moyenne		Minimum	Maximum
					Borne inférieure	Borne supérieure		
cadre	89	2,4761	,86086	,09125	2,2948	2,6575	1,00	4,50
employé.e	126	2,4524	1,00485	,08952	2,2752	2,6295	1,00	5,63
étudiant.e	93	2,7177	1,14489	,11872	2,4820	2,9535	1,00	5,88
indépendant.e	56	2,2902	1,02362	,13679	2,0161	2,5643	1,00	4,88
ouvrier.ère	13	2,5673	,78994	,21909	2,0900	3,0447	1,00	3,50
pensioné.e	6	2,7917	1,30304	,53196	1,4242	4,1591	1,38	4,38
Sans emploi	26	2,4038	1,03036	,20207	1,9877	2,8200	1,00	4,75
Total	409	2,5012	1,01483	,05018	2,4026	2,5999	1,00	5,88

Tests d'homogénéité des variances

		Statistique de Levene	df1	df2	Sig.
Resistance	Basé sur la moyenne	1,656	6	402	,130
	Basé sur la médiane	1,615	6	402	,141
	Basé sur la médiane avec ddl ajusté	1,615	6	384,613	,142
	Basé sur la moyenne tronquée	1,630	6	402	,137

ANOVA

Resistance

	Somme des carrés	df	Carré moyen	F	Sig.
Entre groupes	8,020	6	1,337	1,304	,254
Intra-groupes	412,167	402	1,025		
Total	420,187	408			

Appendix 7: ANOVA test for the age

Descriptives

Resistance

	N	Moyenne	Ecart type	Erreur standard	Intervalle de confiance à 95 % pour la moyenne		Minimum	Maximum
					Borne inférieure	Borne supérieure		
2	78	2,6971	,94888	,10744	2,4832	2,9111	1,00	4,88
3	109	2,3245	,92829	,08891	2,1483	2,5008	1,00	5,63
4	159	2,5519	1,11850	,08870	2,3767	2,7271	1,00	5,88
5	44	2,4233	,87861	,13246	2,1562	2,6904	1,00	4,75
1	19	2,4671	1,04984	,24085	1,9611	2,9731	1,13	4,50
Total	409	2,5012	1,01483	,05018	2,4026	2,5999	1,00	5,88

Tests d'homogénéité des variances

		Statistique de Levene	df1	df2	Sig.
Resistance	Basé sur la moyenne	1,657	4	404	,159
	Basé sur la médiane	1,526	4	404	,194
	Basé sur la médiane avec ddl ajusté	1,526	4	387,187	,194
	Basé sur la moyenne tronquée	1,530	4	404	,193

ANOVA

Resistance

	Somme des carrés	df	Carré moyen	F	Sig.
Entre groupes	7,093	4	1,773	1,734	,142
Intra-groupes	413,094	404	1,023		
Total	420,187	408			

Appendix X: ANOVA test for the salary

Descriptives

Resistance

	N	Moyenne	Ecart type	Erreur standard	Intervalle de confiance à 95 % pour la moyenne		Minimum	Maximum
					Borne inférieure	Borne supérieure		
Under 1500€	138	2,6993	1,11738	,09512	2,5112	2,8874	1,00	5,88
1500-1999€	57	2,3728	1,02330	,13554	2,1013	2,6443	1,00	4,63
2000-2499€	70	2,5768	1,04415	,12480	2,3278	2,8258	1,00	5,63
2500-2999€	46	2,1141	,75315	,11105	1,8905	2,3378	1,00	4,00
3000-3999	41	2,4787	,88781	,13865	2,1984	2,7589	1,00	4,38
4000-4999	20	2,5250	,85321	,19078	2,1257	2,9243	1,38	4,88
5000-10000€	25	2,5350	,82799	,16560	2,1932	2,8768	1,00	4,25
Over 10000€	12	1,8438	,90630	,26163	1,2679	2,4196	1,00	3,50
Total	409	2,5012	1,01483	,05018	2,4026	2,5999	1,00	5,88

Tests d'homogénéité des variances

		Statistique de Levene	df1	df2	Sig.
Resistance	Basé sur la moyenne	1,515	7	401	,160
	Basé sur la médiane	1,432	7	401	,191
	Basé sur la médiane avec ddl ajusté	1,432	7	374,157	,191
	Basé sur la moyenne tronquée	1,477	7	401	,174

ANOVA

Resistance

	Somme des carrés	df	Carré moyen	F	Sig.
Entre groupes	18,893	7	2,699	2,697	,010
Intra-groupes	401,294	401	1,001		
Total	420,187	408			

Appendix 9: T test based on the gender

Statistiques de groupe

	54. Le genre	N	Moyenne	Ecart type	Moyenne d'erreur standard
Resistance	Femme	17	3,7353	1,44825	,35125
	Homme	392	2,4477	,95903	,04844

Test des échantillons indépendants

		Test de Levene sur l'égalité des variances		Test t pour égalité des moyennes						
									Intervalle de confiance de la différence à 95 %	
		F	Sig.	t	df	Sig. (bilatérale)	Différence moyenne	Std. standard	Inférieur	Supérieur
Resistance	Hypothèse de variances égales	15,617	<,001	5,288	407	<,001	1,28759	,24349	,80893	1,76625
	Hypothèse de variances inégales			3,631	16,614	,002	1,28759	,35458	,53817	2,03701

Appendix 10: Survey

Question 1: Do you own, or have you previously owned cryptocurrencies?

If yes: Question 2: When did you become a cryptocurrency owner?

- 2020
- 2015-2019
- 2011-2015
- Before 2011

Question 3: Why did you become a cryptocurrency owner?

→Possibility of selecting multiple answers

- Lower costs
- Flexibility

- Security
- Privacy
- Investment
- Other reasons ….

If no: Question 2: What would it require for you to start using cryptocurrency?

- Regulations
- Increasing use by people
- Increasing use by retailers
- More insight about how cryptocurrencies work
- Other reasons …

Innovation Characteristics

Relative advantage (advantages, efficiency, effectiveness, enhancement) → RA

- Using cryptocurrencies could improve the way I do my transactions (RA1)
- Using cryptocurrencies could give me a greater control over my finance (RA2)
- Using cryptocurrencies could enable me to accomplish my transaction more quickly (RA3)
- Using cryptocurrencies enhances the effectiveness of my transactions (RA4)
- Using cryptocurrencies makes it easier to do my purchase (RA5)

Perceived risk

⇒ **Financial risk (FR)**
- I fear security vulnerabilities or malfunction of exchanges or wallet providers (FR1)
- I fear the inability to convert bitcoins to conventional currencies, or not at a reasonable price (FR2)
- I fear losses due to counterparties failing to meet contractual payments or settlement obligations (FR3)
- I fear losses due to security incidents (e.g., lost passwords, malware) (FR4)

⇒ **Legal risk (LR)**
- I fear the legal uncertainty for holders of cryptocurrencies (LR1)
- I fear the possible government intervention restricting the use of cryptocurrencies (LR2)

⇒ **Operational risk**
- I fear the losses due to modifications to or vulnerabilities in the Bitcoin protocol (OR1)
- I fear the lack of built-in mechanisms to reverse confirmed transactions (OR2)

⇒ **Adoption risk**

- I fear the lack of adoption in commerce in the long term (AR1)
- I fear the lack of interoperability with other services (AR2)

Complexity (usage, skills and mental effort, understanding)

- I think that cryptocurrencies are complex to use (CO1)
- I think that understanding and using cryptocurrencies requires more skills and effort (CO2)
- My interaction with cryptocurrencies payment procedure is generally clear and understandable (CO3)
- I know what to do to get help if I have difficulty using cryptocurrencies (C04)

Compatibility (needs, lifestyle, habits, complementary aspect)

- Cryptocurrencies fit with my needs (COMP1)
- Cryptocurrencies fit with my lifestyle (COMP2)
- Using cryptocurrencies would change my habits (COMP3)
- Cryptocurrencies are a good complement to traditional currencies (COMP4)

Attitude towards existing products/effect on adoption of other innovation (preference, tradition, attitude and satisfaction towards existing products)

- I prefer using traditional currencies (ATT1)
- I do not like the idea of having a decentralized system regarding my money (ATT2)
- I am quite satisfied and have a favourable attitude regarding the current financial system and the way I use "traditional" money such as € to purchase (ATT3)

Consumer's Characteristics

Motivation (intrinsic, extrinsic, intentions)

- Using cryptocurrencies is entertaining and exciting (M1)
- Using cryptocurrencies would be more beneficial for me (M2)
- I need cryptocurrencies for their functions/features(M3)
- I have the intention to use cryptocurrencies in the near future (M4)

Self-efficacy (usage, comfort, confidence, independence)

- I know how to use cryptocurrencies (SE1)
- I would feel comfortable using the Cryptocurrency payment on my own (SE2)
- I am confident of understanding and using cryptocurrency payment (SE3)
- If I wanted to, I could easily operate any of the steps in the Cryptocurrency payment technology on my own even if I have never used it before (SE4)

Characteristics of propagation mechanism (credibility, clarity, source similarity, informativeness)

⇒ **Marketer-controlled propagation mechanism (i.e., mass media)**

- I have a good impression of cryptocurrencies from the media (PM1)
- If the media suggest that cryptocurrencies are good, I will believe them (PM2)
- If the media suggest using cryptocurrencies, I will use them (PM3)
- I read/ saw that using cryptocurrencies is a good alternative to traditional money (PM4)

End User's resistance:

Resistance:

⇒ **Postponement**

- I will wait for using cryptocurrencies until it proves beneficial for me (PO1)
- I need to clarify some queries and justify the reason to go for cryptocurrencies (PO2)
- I am waiting for the right time and required capability to invest in cryptocurrencies (PO3)

⇒ **Opposition**

- I fear of wasting my money by going for cryptocurrencies (OP1)
- I have some complaints/objections against cryptocurrencies (OP2)

⇒ **Rejection**

- I don't need cryptocurrencies (RE1)
- Cryptocurrencies are not for me (RE2)

⇒ **Resistance to change**

- I fear of the changes that cryptocurrencies may impose on me (REC1)

Demographics

Gender

- Male
- Female

Year of birth

- Before 1965
- 1965 - 1979
- 1980 - 1989
- 1990 - 1999
- From 2000

Education

- Student
- Employee
- Labourer
- Executive
- Independent
- Pensioner
- Unemployed

Average monthly income

- Under 1200€
- 1200 - 1999€
- 2000 - 2499€
- 2500 - 2999€
- 3000 - 3999€
- 4000€ -4999€
- 5000€ - 10000€
- Over 10.000€

Appendix 11: Construct analysis for the pilot survey's production

Construct	variables	References	Corresponding question
Relative advantage	**Advantages of cryptocurrencies**	Moore and Bensabat (1991)	Using cryptocurrencies could improve the way I do my transactions
	Effects of cryptocurrencies on money control		Using cryptocurrencies could give me a greater control over my finance
	Efficiency		Using cryptocurrencies could enable me to accomplish my transaction more quickly

	Effectiveness		Using cryptocurrencies enhances the effectiveness of my transactions
	Transaction enhancement		Using cryptocurrencies makes it easier to do my purchase
Perceived Risk	**Financial risk**	Böhme & Abramova (2016)	Security vulnerabilities or malfunction of exchanges or wallet providers
			Inability to convert bitcoins to conventional currencies, or not at a reasonable price
			Losses due to counterparties failing to meet contractual payments or settlement obligations
			Losses due to security incidents (e.g., lost passwords, malware)
	Legal risk	Böhme & Abramova (2016)	Legal uncertainty for holders of cryptocurrencies
			Possible government intervention restricting the use of cryptocurrencies
	Operational risk	Böhme & Abramova (2016)	Losses due to modifications to or vulnerabilities in the Bitcoin protocol
			Lack of built-in mechanisms to reverse confirmed transactions
	Adoption risk	Böhme & Abramova (2016)	Lack of adoption in commerce in the long term
			Lack of interoperability with other services
Complexity	**Usage complexity**	I.Brown et al 2003 Lee, Cheung, Chen, 2007	Cryptocurrencies are complex to use
	Skills & mental effort	I.Brown et al, 2003; Moore & Benbasat, 1991; He, Fu, & Li, 2006	Understanding and using cryptocurrencies requires more skills and effort
	Understanding of the functions	Holak Lehmann, 1990	My interaction with cryptocurrencies payment procedure is generally clear and understandable

Compatibility	**Compatible with needs**	Holak & Lehmann, 1990; Yang, 2005 &	Cryptocurrencies fit with my needs
	Compatible with lifestyle/workstyle	I. Brown et al, 2003; Taylor & Todd, 1995	Cryptocurrencies fit with my lifestyle
	Compatible with habits	Moore & Benbasat, 1991	Using cryptocurrencies would change my habits
	Complement	He, Fu, & Li, 2006	Cryptocurrencies are a good complement to traditional currencies
Attitude towards existing products / Effect on adoption of other innovation	**Preference**	Khan and Hyunwoo, 2009	I prefer using traditional currencies
	Concept/tradition	Schwartz, 1992	I do not like the idea of having a decentralized system regarding my money
	Attitude towards and satisfaction from existing products	Karjaluoto et al., 2002 Wang et al., 2008	I am quite satisfied and have a favourable attitude regarding the current financial system and the way I use money such as € to purchase
Motivation	**Intrinsic motivation**	Lee Matthew et al., 2007	Using cryptocurrencies is entertaining and exciting
	Extrinsic motivation	Park and Chen, 2007	Using cryptocurrencies would be more beneficial for me
	Extrinsic motivation	Lee Matthew et al., 2007	I need cryptocurrencies for their functions/features
	Intentions	Park and Chen, 2007	I have the intention to use cryptocurrencies in the near future
Self-efficacy	Usage	Brown et al., 2003; Compeau & Higgins, 1995	I know how to use cryptocurrencies
	Comfort	Nuryyev et al, 2020, Hung et al., 2003	I would feel comfortable using the Cryptocurrency payment on my own.
	Confidence	Compeau and Higgins, 1995; I. Brown et al., 2003	I am confident of understanding and using cryptocurrency payment
	Independence	Compeau and Higgins, 1995; Taylor & Todd, 1995	If I wanted to, I could easily operate any of the steps in the Cryptocurrency payment technology on my own even if I have never used it before
Characteristics of propagation mechanism: Marketer-	**Credibility**	Appelman and Sundar, 2015	I think that the information shared by the media on cryptocurrencies is accurate

controlled propagation mechanism (i.e. mass media)	**Clarity**	Kim et al. (2008) Ram, 1987	The media offers clear and sufficient information about cryptocurrencies
	Source similarity	Ram, 1987	The information that I saw from the media share a similar vision about cryptocurrencies
	Informativeness	Ram, 1987	I read/ saw informative information about cryptocurrencies that give me a better vision of them
End-user resistance:	**Postponement**	Szmigin & Foxall, 1998; Mirella et al., 2009 Szmigin & Foxall, 1998 Szmigin & Foxall, 1998	I will wait for using cryptocurrencies until it proves beneficial for me I need to clarify some queries and justify the reason to go for cryptocurrencies I am waiting for the right time and required capability to invest in cryptocurrencies
	Opposition (waste of resource) **Opposition**	Yang, 2005 Szmigin & Foxall, 1998	I fear of wasting my money by going for cryptocurrencies I have some complaints/objections against cryptocurrencies
	Resistance to change	Sheth, 1981	I fear of the changes that cryptocurrencies may impose on me
	Rejection	Mirella et al., 2009 Szmigin & Foxall, 1998 Szmigin & Foxall, 1998; Mirella et al., 2009	I don't need cryptocurrencies It is unlikely that I go for cryptocurrencies in the near future Cryptocurrencies are not for me

Bibliography

Abbas, M., & Mohtar, S. B. (2016). Factors influencing consumer resistance to innovation: Relationship between relative advantage, attitude towards existing product, social influence and self-efficacy. *Researchers World*, *7*(1), 70.

Abramova, S., & Böhme, R. (2016). Perceived benefit and risk as multidimensional determinants of bitcoin use: A quantitative exploratory study.

Al-Amri, R., Zakaria, N. H., Habbal, A., & Hassan, S. (2019). Cryptocurrency adoption: current stage, opportunities, and open challenges. *International Journal of Advanced Computer Research*, *9*(44), 293-307.

Aljabr, A. A., Sharma, A., & Kumar, K. (2019). Mining Process in Cryptocurrency Using Blockchain Technology: Bitcoin as a Case Study. *Journal of Computational and Theoretical Nanoscience*, *16*(10), 4293-4298.

Barczak, G., Ellen, P. S., & Pilling, B. K. (1997). Developing typologies of consumer motives for use of technologically based banking services. *Journal of business research*, *38*(2), 131-139.

Blischke, W. R., Karim, M. R., & Murthy, D. P. (2011). Preliminary data analysis. In *Warranty data collection and analysis* (pp. 159-189). Springer, London.

Blockchain France (2016). La Blockchain décryptée. Les clefs d'une révolution. [Online] Avalable on: https://www.fg2a.com/wp-content/uploads/2017/01/La-blockchain-decryptee-le-s-clefs-dune-revolution.pdf

Boland (2020). Crypto-monnaies : vers une nonchalance régulatoire ?. [Online] Avalable on: https://www.lecho.be/tech-media/dossiers/disrupt/crypto-monnaies-vers-une-nonchalance-regulatoire/10207838.html

Bradbury, D. (2013). The problem with Bitcoin. *Computer Fraud & Security*, *2013*(11), 5-8.

BTCDirect (2020). Combien de bitcoins son ten circulation?. [[Online] Avalable on: https://btcdirect.eu/fr-fr/combien-de-bitcoins-sont-en-circulation

Buterin, V. (2014). A next-generation smart contract and decentralized application platform. *white paper*, *3*(37).

Claudy, M. C., Garcia, R., & O'Driscoll, A. (2015). Consumer resistance to innovation—a behavioral reasoning perspective. *Journal of the Academy of Marketing Science*, *43*(4), 528-544.

Cohen-Almagor, R. (2013). Internet history. In *Moral, ethical, and social dilemmas in the age of technology: Theories and practice* (pp. 19-39). IGI Global.

Coindesk (2017). From $900 to $20.000: Bitcoin's Historic 2017 Price Run Revisited. [Online] Avalable on: https://www.coindesk.com/900-20000-bitcoins-historic-2017-price-run-revisited

Cornescu, V., & Adam, C. R. (2013). The consumer resistance behavior towards innovation. *Procedia Economics and Finance*, *6*, 457-465.

DeCoster, J. (1998). Overview of factor analysis.

Dedehayir, O., & Steinert, M. (2016). The hype cycle model: A review and future directions. *Technological Forecasting and Social Change*, *108*, 28-41.

Delahaye J. (2017) : "Monnaies cryptographiques et blockchains – Créer de la confiance » [Online] Avalable on: https://www.techniques-ingenieur.fr/base-documentaire/technologies-de-l-information-th9/management-des-systemes-d-information-42302210/monnaies-cryptographiques-et-blockchains-h5538/

Deutsche Bank Research (2019). Imagine 2030. [Online] Avalable on: https://www.dbresearch.com/PROD/RPS_EN-PROD/PROD0000000000503196/Imagine_2030.pdf?undefined&realload=gOR4e5D03dW4IJCsLiBi2ppztyLD0qtzFrZDWjUKc4lsvi2tCd98naQWA2TheI3w

de Vries, A. (2019). Renewable energy will not solve bitcoin's sustainability problem. *Joule*, *3*(4), 893-898.

Er-Rajy, L., El Kiram My, A., El Ghazouani, M. O. H. A. M. E. D., & Achbarou, O. (2017). Blockchain: Bitcoin wallet cryptography security, challenges and countermeasures. *Journal of Internet Banking and Commerce*, *22*(3), 1-29.

Forbes (2017). Bitcoin Is The Second Most-Searched Global News Term Of 2017. [Online] Avalable on: https://www.forbes.com/sites/johnkoetsier/2017/12/13/bitcoin-is-the-second-most-searched-global-news-term-of-2017/?sh=394217505d8b

Garcia, R., Bardhi, F., & Friedrich, C. (2007). Overcoming consumer resistance to innovation. *MIT Sloan management review*, *48*(4), 82.

Gartner (2020): Gartner Hype Cycle. Interpreting technology hype. [Online] Avalable on: *https://www.gartner.com/en/research/methodologies/gartner-hype-cycle*

Gürcan, Ö., Del Pozzo, A., & Tucci-Piergiovanni, S. (2017, October). On the bitcoin limitations to deliver fairness to users. In *OTM Confederated International Conferences" On the Move to Meaningful Internet Systems"* (pp. 589-606). Springer, Cham.

Hicks & Reeth (2020). 7 of the Best Cryptocurrencies to Invest in Now. [Online] Avalable on: https://money.usnews.com/investing/cryptocurrency/slideshows/whats-the-best-cryptocurrency-to-buy

Hosseini, M. H., Delaviz, M., Derakhshide, H., & Delaviz, M. (2016). Factors affecting consumer resistance to innovation in mobile phone industry. *International Journal of Asian Social Science*, *6*(9), 497-509.

Hulin, C., Netemeyer, R., and Cudeck, R. (2001). Can a Reliability Coefficient Be Too High? Journal of Consumer Psychology, Vol. 10, Nr. 1, 55-58

ING (2019). Les Belges indifférents face aux cryptomonnaies. [Online] Avalable on: https://www.ing.be/Assets/nuid/documents/iben-crypto-FR.pdf

Jonker, N. (2018). What drives bitcoin adoption by retailers.

Kelly, Patrick, & Kranzberg M. (1978), "Technological Innovation: A Critical Review of Current Knowledge," San Francisco: San Francisco Press Inc.

Leifer, R., McDermott, C. M., O'connor, G. C., Peters, L. S., Rice, M. P., & Veryzer Jr, R. W. (2000). *Radical innovation: How mature companies can outsmart upstarts*. Harvard Business Press.

Li, M., Lauharatanahirun, N., Steinberg, L., King-Casas, B., Kim-Spoon, J., & Deater-Deckard, K. (2019). Longitudinal link between trait motivation and risk-taking behaviors via neural risk processing. *Developmental cognitive neuroscience*, *40*, 100725.

Lin, H. F. (2011). An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. *International journal of information management*, *31*(3), 252-260.

Mahomed N. (2017). *Understanding consumer adoption of cryptocurrencies* (Doctoral dissertation, University of Pretoria).

McInnes (2021). Six key cryptocurrencies and how they work. [Online] Avalable on: https://www.afr.com/wealth/personal-finance/six-key-cryptocurrencies-and-how-they-work-20210212-p571wc

MurrAy, k. B., and J. l. ScHlActer. “The Impact of Services versus Goods on Consum- ers’ Assessment of Perceived Risk and Variabil- ity.” *Journal of the Academy of Marketing Science* 18, 1 (1990): 51–65.

Nakamoto, S. (2008). Bitcoin: A peer-to-peer electronic cash system.

Nian, L. P., & Chuen, D. L. K. (2015). Introduction to bitcoin. In *Handbook of digital currency* (pp. 5-30). Academic Press.

Park, Y., & Chen, J. V. (2007). Acceptance and adoption of the innovative use of smartphone. *Industrial management & data systems*.

Pearson, R. H. (2008). *Recommended sample size for conducting exploratory factor analysis on dichotomous data*. University of Northern Colorado.

Ram, S., & Sheth, J. N. (1989). Consumer resistance to innovations: the marketing problem and its solutions. *Journal of consumer marketing*.

Ram, S., 1987. A model of innovation resistance. Advances in Consumer Research, 14(4): 208-213.

Rogers, E. M. (1962). Diffusion of innovations. New York: Free Press of Glencoe.

Rogers, Everett M. 1983. Diffusion of innovations. 3rd ed. New York: London: Free Press.

Rogers, Everett M. Diffusion of Innovations. New York: Free Press, 2003. Print.

Rui Zhang, Rui Xue, and Ling Liu. 2019. Security and Privacy on Blockchain. Comput. Surv.52, 3, Article 51 (July 2019), 34 pages.

Saaksjarvi, M. (2000). The Roles of Corporate IT Infastructure and their Impact on IS Effectiveness. *ECIS 2000 Proceedings*, 90.

Sahin, I. (2006). Detailed review of Rogers' diffusion of innovations theory and educational technology-related studies based on Rogers' theory. *Turkish Online Journal of Educational Technology TOJET*, *5*(2), 14-23.

Saiedi, E., Broström, A., & Ruiz, F. (2020). Global drivers of cryptocurrency infrastructure adoption. *Small Business Economics*, 1-54.

Spenkelink, H. F. (2014). *The Adoption Process of Cryptocurrencies-Identifying factors that influence the adoption of cryptocurrencies from a multiple stakeholder perspective* (Master's thesis, University of Twente).

Tan, M. & Teo, T. (2000). Factors Influencing the Adoption of Internet Banking. Journal of the Association for Information Systems.

Tuwiner J. (2021). Who accepts Bitcoin? 11 Major Companies. [Online] Avalable on: https://www.buybitcoinworldwide.com/who-accepts-bitcoin/

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia Economics and Finance*, *20*, 679-686.

Uyanık, G. K., & Güler, N. (2013). A study on multiple linear regression analysis. *Procedia-Social and Behavioral Sciences*, *106*, 234-240.

Williams, B., Onsman, A., & Brown, T. (2010). Exploratory Factor Analysis: A Five-Step Guide for Novices. Australasian Journal of Paramedecine, 8, 1-13

Wipulanusat, W., Panuwatwanich, K., & Stewart, R. A. (2017). Exploring leadership styles for innovation: an exploratory factor analysis. *Engineering Management in Production and Services*, *9*(1).

Zhang, R., Xue, R., & Liu, L. (2019). Security and privacy on blockchain. *ACM Computing Surveys (CSUR)*, *52*(3), 1-34.

Zhao, Y., & Duncan, B. (2018, July). The impact of crypto-currency risks on the use of blockchain for cloud security and privacy. In *2018 International Conference on High Performance Computing & Simulation (HPCS)* (pp. 677-684). IEEE.